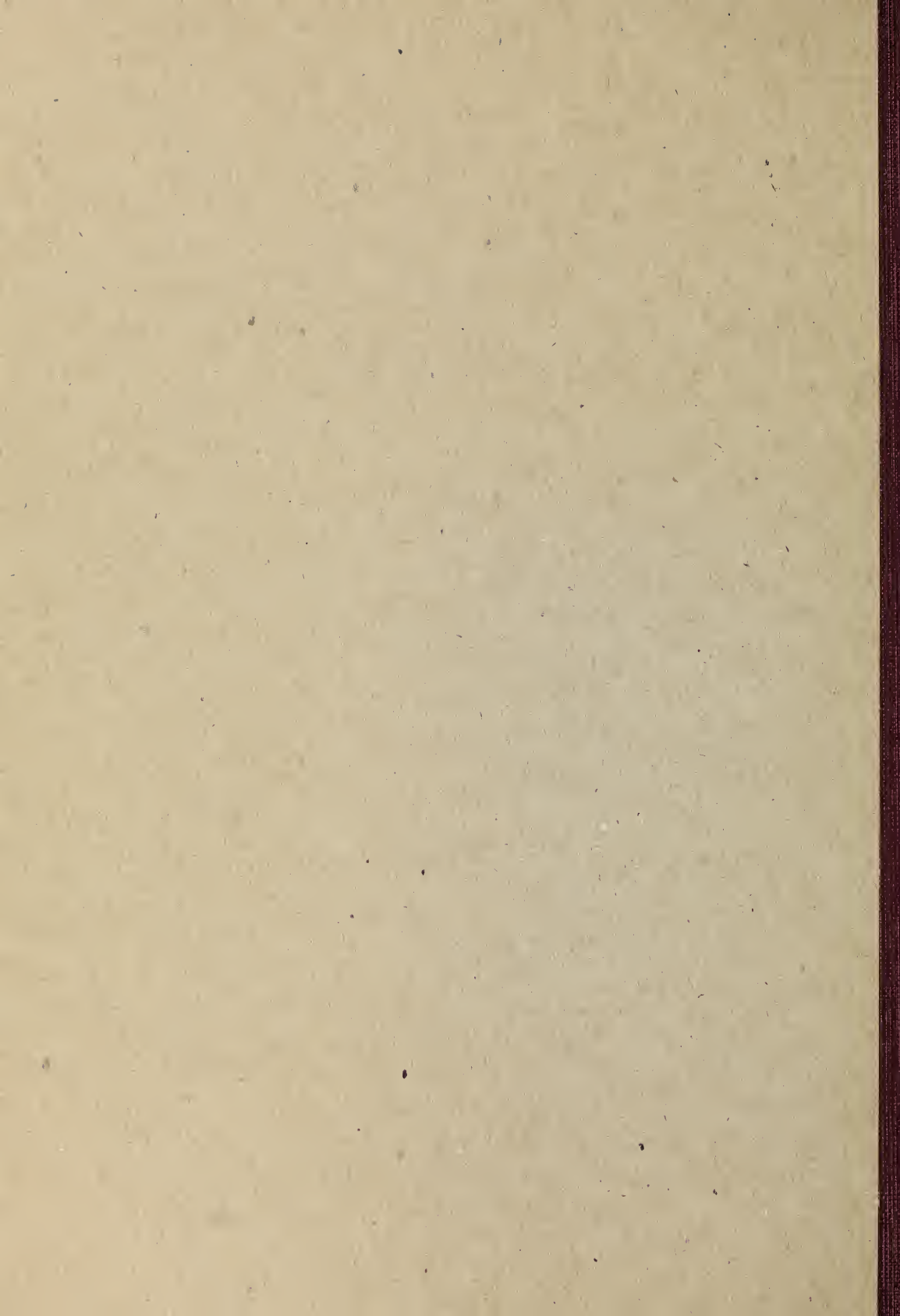


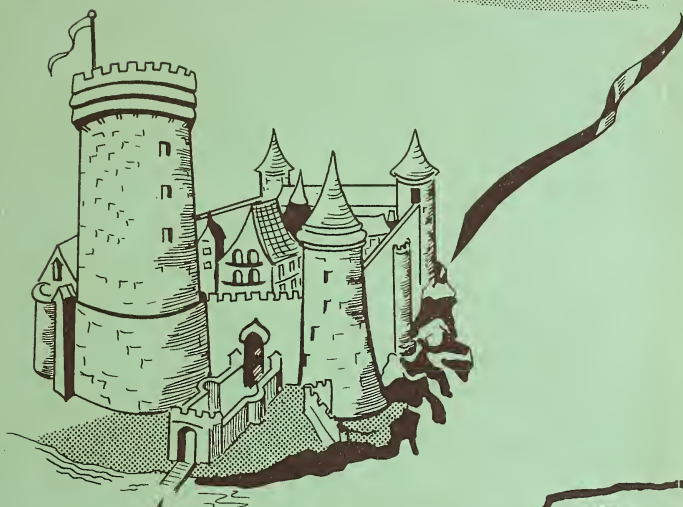
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Homes Through The Ages



CURRICULUM

TEACHERS' RESOURCE UNIT
For Grade VI, Section D

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Home Through The Ages has been written by Mr. D. P. Green of H.A. Gray School, Edmonton, under the direction of the Resource Unit Sub-committee.

HOW TO USE A TEACHER'S RESOURCE UNIT

A teacher's resource unit contains information, outlines, problems and suggested activities which are useful in developing an enterprise theme. It is designed to provide an abundance of suggestions from which the teacher with the help of the class may plan a unit or several units of study.

Such an outline is not entirely suited to every class. The nature of community interests, library facilities and past experience of the class all have a bearing on the way in which the enterprise should develop. Rigid adherence to any outline may result in poor teaching. The eventual plan that the teacher and his class make is the only one guaranteed to be successful, for only they can judge just how useful any idea or suggestion may be.

The pupils should have a share in planning and if the overview has been good they will understand and identify the problems as their own. The overview is the beginning stage in developing an enterprise when time is taken to see filmstrips, arrange visual material on the bulletin board and to read generally about the people of the enterprise. The overview is largely exploratory and must give enough information to arouse keen interest and permit intelligent participation in planning.

A resource unit thus suggests a few of the problems, sources of information, types of activities that may be necessary to gather the information and skills that should be developed by the pupils. It in no way limits the development of the enterprise. Instead it is hoped that the suggestions given here may stimulate more successful planning.

In the case of *Homes Through the Ages*, one phase of living, such as how man entertained himself in his leisure hours in his many types of homes might prove an interesting subject for some classes. Tracing the development of the fine arts through the years of history will provide the basis for much scientific study and history as well as give a better appreciation for art, music and drama. The subject of heating the homes, of finding pure water, etc. presents other groups of problems throughout all time. The organization of such enterprise work should result in some interesting studies.

Probably every worthwhile enterprise results in some creative work on the part of the pupils.

Language expression may be both oral and written in these grades. The child should be encouraged in both areas to use colorful words and ideas. Paragraphs of description should include appeals to as many of the senses as possible. Note should be taken during language periods of weaknesses in written and oral English, of errors which need explanation or drill, but corrections should not be given at a time when they will inhibit the creative urge.

Art work in the various projects and construction activities should be the result of the pupil's own ideas. Murals depicting life in the past should be sufficiently full of action that they tell a story. If the attention is kept on action, form will take care of itself. The big thing to avoid is any kind of copy work. Ideas for pictures should spring from the reading and discussions not from illustrations in the references.

Other creative work such as dramatization and pantomimes should be encouraged. This phase of creative effort has been dealt with at the end of Problem A of this enterprise.

Major Understandings that could be considered by the teacher:

1. To appreciate the extensive change in comfort man has experienced.
2. To appreciate that the development of our ways of living has been a slow process over 10,000 years.
3. To appreciate the contribution science has made to our homes.
4. To understand scientific principles behind home operations.
5. To understand that the development of home life has paralleled that society in which it existed.

Although Number Four seems important in that it provides an almost endless opportunity for the teacher to include essential topics that have been omitted in previous enterprises, the other four are really of quite great importance also. The tremendous changes that have been accomplished in the past five thousand years threaten at times to completely overshadow the lives of people. And yet, people themselves are motivated today primarily by the same urges to obtain food, clothing, and shelter as the early Assyrians. It is suggested that every opportunity should be grasped to show scientific developments, to compare one society's changes with another, and yet to illustrate that similar people have existed in all societies.

INTRODUCTION TO THE ENTERPRISE

The teacher and class could very well begin the enterprise by a general survey of peoples studied previously through the problem:

"What peoples have been studied in your enterprises in Grades IV, V, VI?"

One class, after blackboard listing of peoples, tried individually to place them in a suitable order and finally referred to reference books to locate general dates of people and of periods. The result of their efforts is listed below:

Pre-historic Man	25000 B.C.
Cavemen	10000 B.C.
Egyptians	3000 B.C.
North American Indians	1500 B.C.
Eskimos	1 000 B.C.
Romans	Birth of Christ
Medieval English	1200 A.D.
Pioneers	1850 A.D.
Contemporary Canadians	1958 A.D.

The teacher might begin the development of a time concept. This was tried by the use of two time charts which the class incorporated in their notebooks as individual projects.

CHART I. To Develop the Tremendous Age of Man

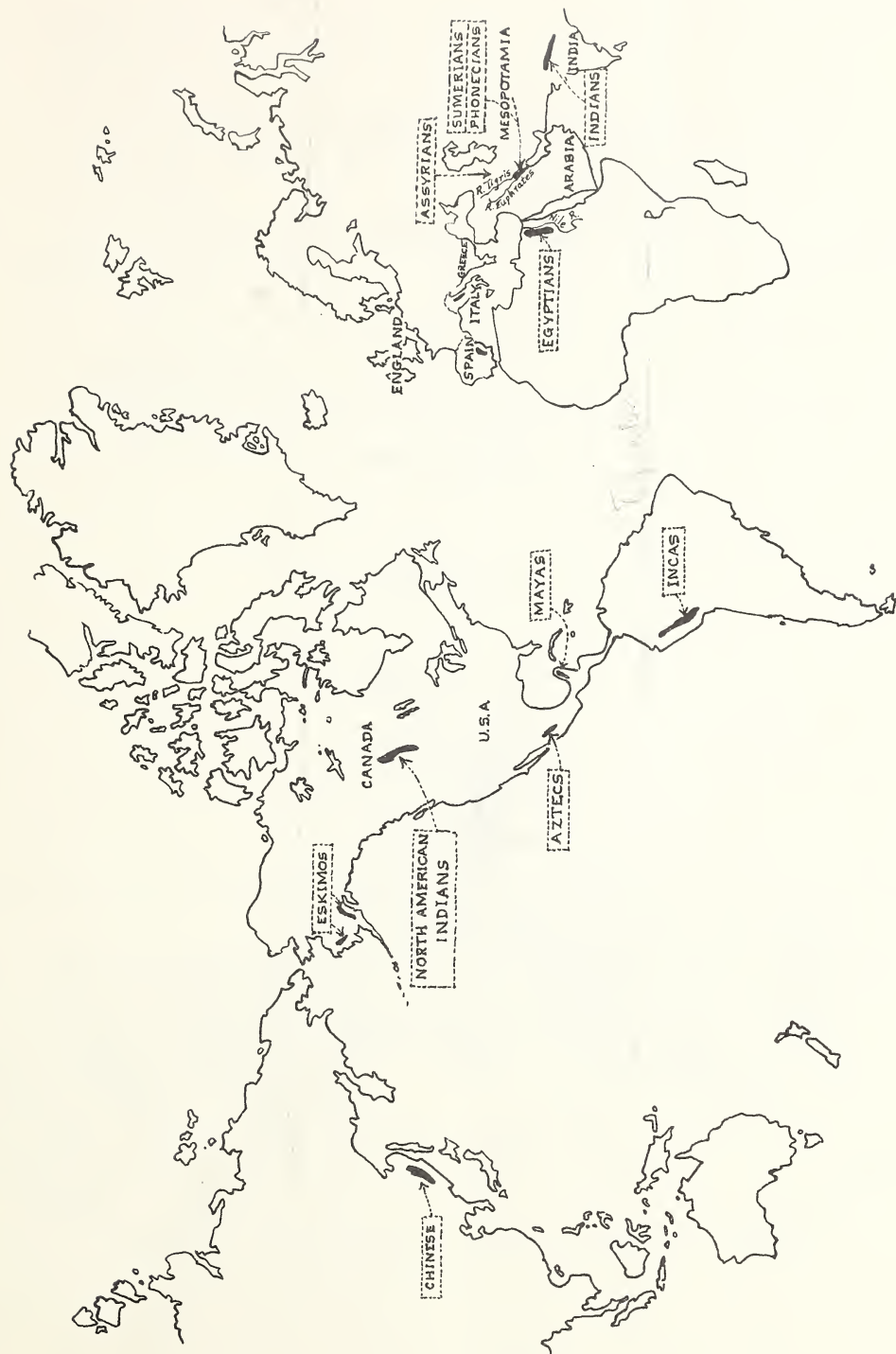
Dinosaurs	100,000,000 B.C.
Pre-historic Man	1,000,000 B.C.
Today	1958 A.D.

The class may approach the charts as arithmetic problems:

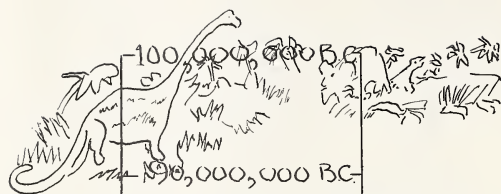
1. Draw a rectangle 10 in. by 2 in. in the center of the paper.
2. Divide the rectangle into ten equal parts.
3. How long ago did dinosaurs live?
4. How can 100,000,000 years be shown?
5. Mark the years from the Birth of Christ to 100,000,000 B.C.
6. Locate pre-historic man at 1,000,000 B.C.
7. Mark in 1,000,000 B.C. as one-tenth of the 10,000,000 year interval.
8. To locate Today consider 2,000 years as a fraction of 10,000,000.
9. Locate 1958 approximately by addition to the rectagle.

CHART II. To Develop an Approximate Sequence of People

Use the results of the class' attempt to survey the peoples that have been previously studied. One could use a similar technique to that one used for Chart I, but give an opportunity to some members of the class to explore on their own.



MAP SHOWING PRIMITIVE PEOPLE AND MODERN COUNTRIES



100,000,000 BC

90,000,000 BC

80,000,000 BC

70,000,000 BC

60,000,000 BC

50,000,000 BC

40,000,000 BC

30,000,000 BC

20,000,000 BC

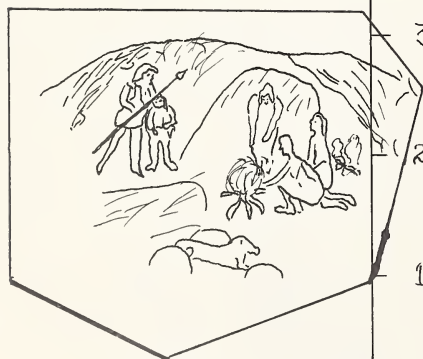
10,000,000 BC

1,000,000 BC

0 BC

TIME CHART

TODAY



As they work with the above two charts, the class might consider the following:

What Do We Use Our Homes For?

A summary of their conclusions is listed below:

- | | |
|---------------------|-------------------------------|
| 1. For warmth, | 5. For leisure-time projects, |
| 2. For keeping dry, | 6. For entertainment, |
| 3. For eating, | 7. For carrying on work, |
| 4. For sleeping, | 8. For personal cleanliness. |

From the statements above, theme problems concerning homes could be developed by the class. These problems could be used by the teacher and class to evaluate their approach to the basic problem of re-creating a picture of how people lived in the past:

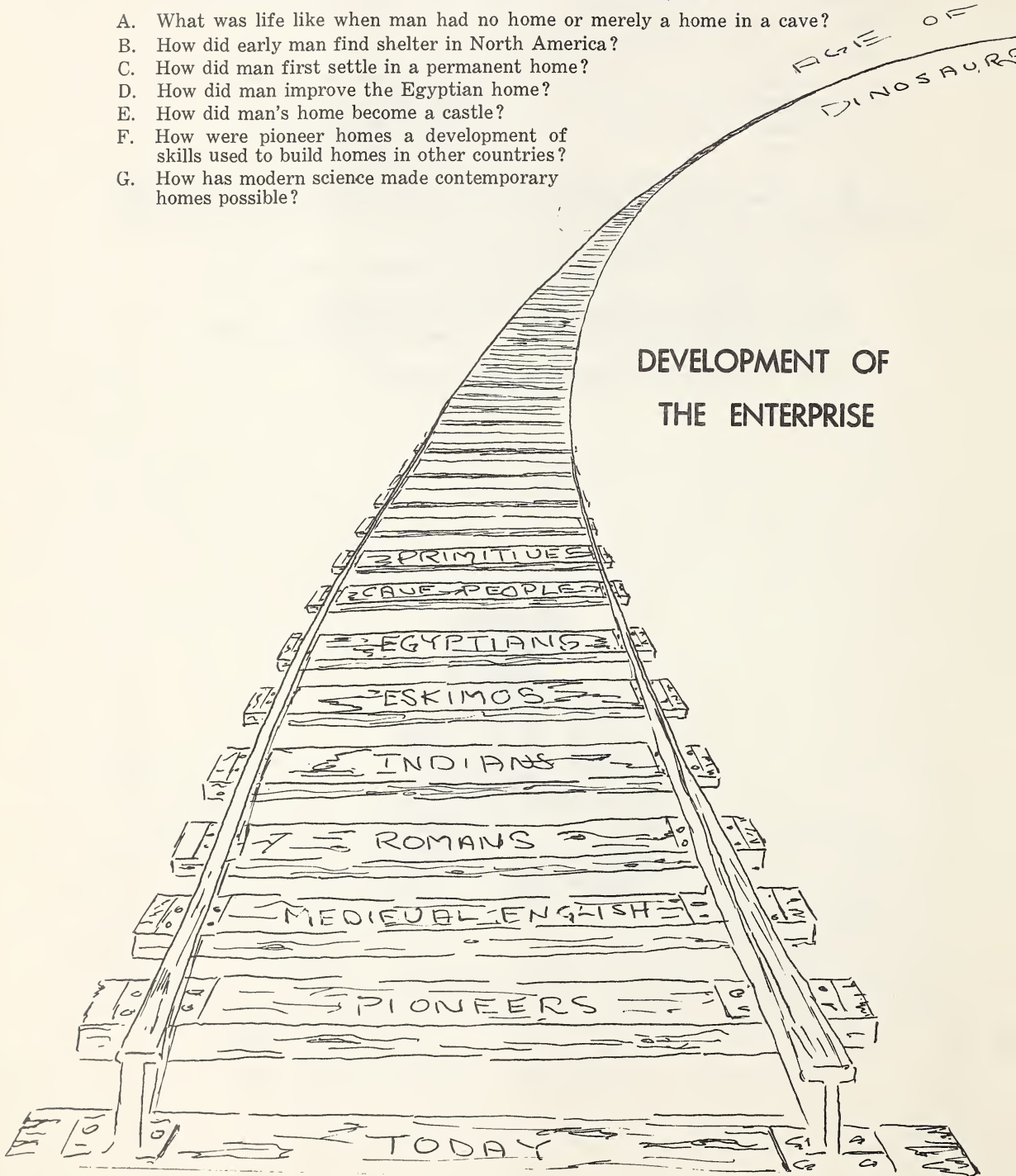
1. How were their homes kept warm and dry?
2. How were their homes used as places for storing, preparing, and eating food?
3. How were their homes made comfortable for sleeping?
4. How were their homes adapted for leisure-time projects and entertaining?
5. How were their homes used for carrying on work?



Problems Which Have Been Considered in This Enterprise

- A. What was life like when man had no home or merely a home in a cave?
- B. How did early man find shelter in North America?
- C. How did man first settle in a permanent home?
- D. How did man improve the Egyptian home?
- E. How did man's home become a castle?
- F. How were pioneer homes a development of skills used to build homes in other countries?
- G. How has modern science made contemporary homes possible?

DEVELOPMENT OF THE ENTERPRISE



Problem A

What Was Life Like When Man Had No Home And What Was His First Home Like?

If the purpose of the enterprise is to show how man gradually learned more skills to improve his mode of living, some attempt should be made to develop a picture of his life in its simplest form. Pre-historic man is chosen as the starting point.

Since the topic of primitive man is probably not a new one to Grade VI, a picture of the essential phases of his life can be developed by the whole class. An approach that may be interesting to the children is that of pretending to be an early man. As such they may develop such problems as:

1. What would you look for first thing in the morning?
2. Where would you obtain breakfast?
3. How much time would food gathering take?
4. Would there be an opportunity to arrange for variety in your diet?
5. How would you be able to prepare food for eating?
6. With evening, a place to spend the night is essential. What places would you look for?
7. What advantages and disadvantages are there in the place you found?
8. In what part of the world would you of necessity live?

The purpose of the preceding survey problems is to enable the student to see man's beginning as it might have been. The method used by the class to solve these problems is not important so long as they have developed the problems with the teacher's guidance, and if they have an opportunity to do some reference reading, and if they can participate in the solutions to the problems.

From the first part of Problem A, the youngsters should have a picture of man's life when he lived without much success in controlling nature. As a caveman, he still spent most of his life outside, but he gradually moved towards the first shelter. By using a similar approach to that used with prehistoric man, the youngster can put himself in the place of the caveman who is trying to stay alive. Discussion problems could include the following:

1. What advantages are there to living outside?
2. What are the disadvantages to living outside?
3. If you were outside, where would you find a ready-made shelter?
4. What would be the advantages and disadvantages of such a shelter?
5. How would you have to change your habits to live in such a shelter?
6. Is there a difference in caves?
7. What would you look for in a desirable cave?
8. With a fairly permanent home, how would you provide yourself with food?
9. How would you prepare your food for eating?
10. How would you store your food?
11. How would you arrange to have water?
12. What arrangements would be comfortable for sleeping?
13. Are there special dangers at night?
14. What would you do in the evening?
15. How would you receive visitors?
16. What special dangers are there in having others around?
17. What special advantages are there in having others around?

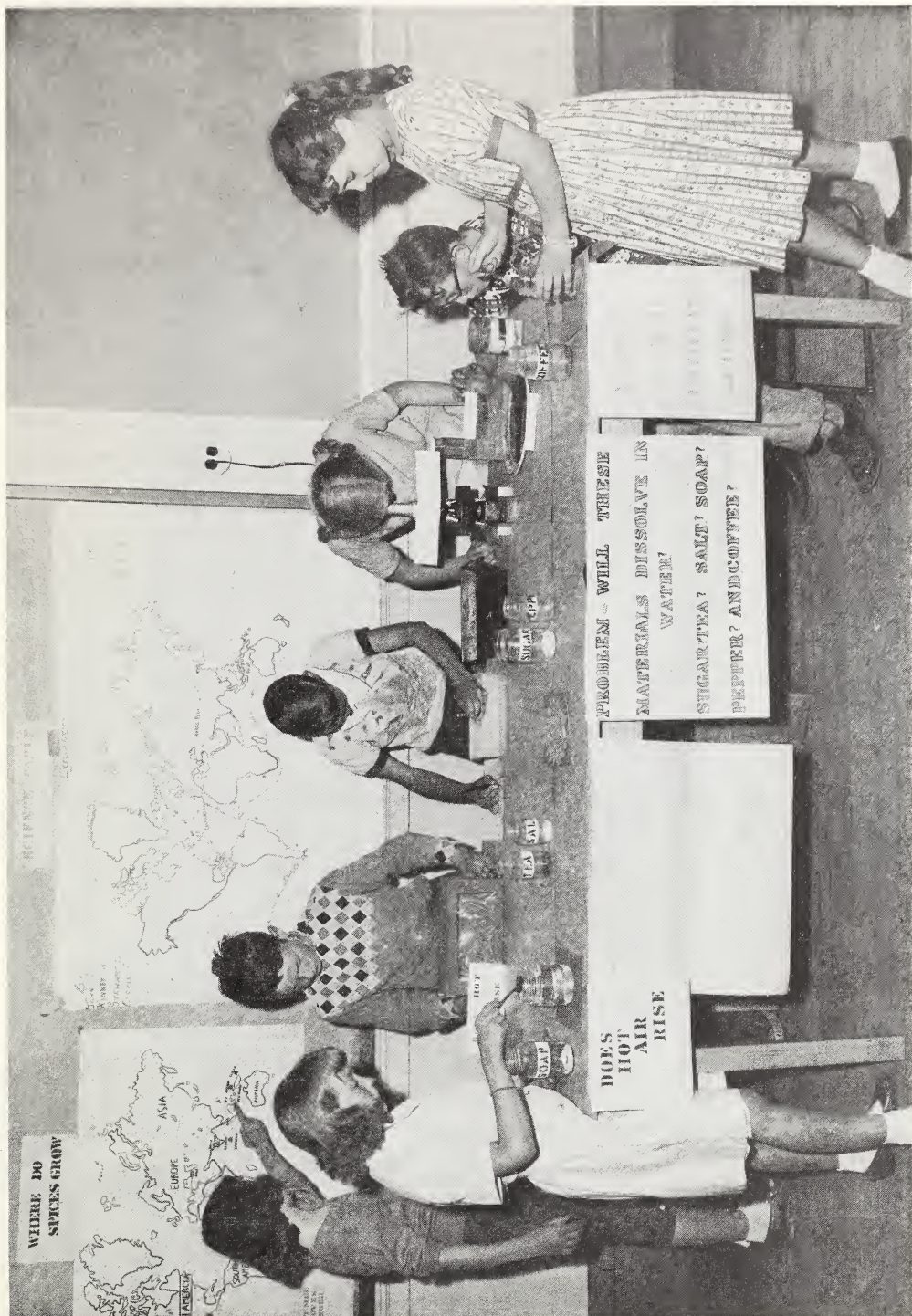
Most teachers will vary their approach with each new section. Some techniques that could be used effectively are:

1. Teacher-controlled classroom discussion.
2. Group discussion with or without reporting to the class.
3. Creative writing.
4. Individual reporting.

Concepts to be Considered: WHAT WAS LIFE LIKE WHEN MAN HAD NO HOME OR MERELY A HOME IN A CAVE?

As the picture of prehistoric man's life expands in the class, some correlated information is going to be necessary. Teacher and student projects could include the following:

- A— 1. To develop interest in the picture of how man looked—use the story of the Java Man..
- A— 2. Locate pre-historic man and his movements.
- A— 3. Compare modern countries with the locations of primitive man.
- A— 4. Decide which type of tree would best provide man with shelter.
- A— 5 Survey early animals.
- A— 6. Consider what wild fruit in Alberta primitive men would use.
- A— 7. Study the natural filtration and purification of water in streams.
- A— 8. Fossil study.
- A— 9. Consider phases of primitive life such as:
- | | |
|--|--|
| (a) How Man Learned to Use Fire. | (d) How Food and Water Were Obtained. |
| (b) How Tools were made. | |
| (c) How Women Made Better Clothing, Dishes, Bedding. | (e) How People Entertained Themselves. |
- A—10. Consider how stone tools were made.
- A—11. The mystery of plant reproduction.



Courtesy Photographic Branch Dept. of Economic Affairs

PROBLEM SOLVING IN GRADE VI

SUGGESTIONS FOR CARRYING OUT TEACHER AND STUDENT PROJECTS

In the sections concerning projects not all have been expanded. A few only have been done to give an idea of how projects might be developed.

To assist you to locate the ones that have been enlarged we have numbered them to match the problem to which they belong. For example, the map of pre-historic peoples and their movements has been numbered A-2 to show that it is the second project mentioned under **Concepts to be Considered**. Problem A, **What was Life Like When Man Had No Home or Merely a Home in a Cave?**

The general pattern, **Class Survey Problems**, **Concepts to be Considered** and **Suggestions for Projects**, is continued through the eight sections.



PROJECT A-1. To Develop the Picture of How Man Looked

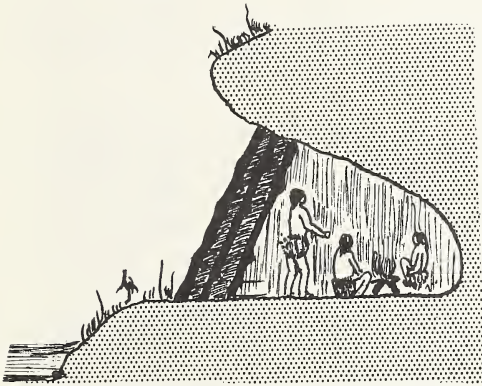
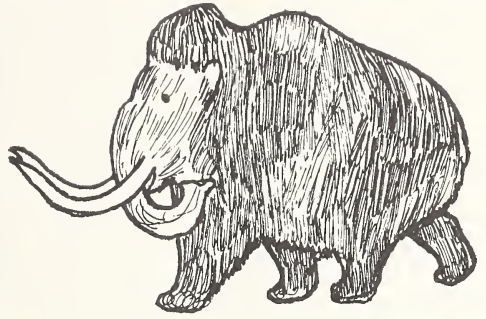
The stories of finding of the Java Man, Neanderthal and Cro-Magnon are very common ones. There follow a few notes which might be included in a discussion of pre-historic relics.

Many relics of early man have been discovered by archaeologists. Every once in a while someone chances upon new evidences of the dim past. There was, for example, a young girl who lived, in the nineteenth century, in a small village in Spain. She happened to be playing in a cave near her home where she saw some strange pictures on the walls of this cave and called them to the attention of her father. He told others of his daughter's discovery. The drawings were finally examined by scientific experts, who identified the pictures as prehistoric carvings made by early cave dwellers.

It is thought at first that the carvings were made to invoke magic—to make sure of a good kill during the coming hunt. This is possible. Nevertheless the work of the artists is very good. They evidently took a pride in doing their drawings. There are pictures of fish, of the great mammoth, the saber-toothed tiger, wild boar, etc. Vegetable colors mixed with grease have been used in the drawings and in places red dust had been blown in around hands to make a pattern on the wall.

From the floors of these caves have been dug pieces of rough pottery and ivory tallies on which are recorded the number of animals shot in a hunt, also chipped stone tools such as axes and scrapers.

Because the remains of these people were found at a spot called Cro-Magnon on the Vézère River they are called the Cro-Magnon race. From these people it is felt modern man descended. They are the original homo sapiens—meaning “wise man” or “knowing man.”



Certain archaeologists regard a skeleton called the “Java Man” as the earliest specimen of human relics. It is only a top skull, a few teeth, and a leg bone. It is estimated, because of this relic, that people must have roamed the island of Java about 500,000 years ago, whereas the people belonging to the era of the Cro-Magnon Man inhabited Europe 50,000 years ago.

The Java Man probably had only rocks or trees for shelter and had no proper home.

Between these two is the Neanderthal man who entered Europe and Africa about 200,000 years ago. Remains of this race were first found in Dusseldorf, Germany, in 1856. The Neanderthal Man was a cave dweller and on the main line of evolution from the Java Man to the Cro-Magnon Man.



JAVA MAN

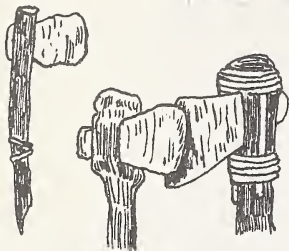


NEANDERTHAL MAN



CRO-MAGNON MAN

The Java Man of early times was not very different from the animals in many ways, but in some very important ways he was quite different. He walked on two feet and carried his body with head up and a little forward. This left his long arms and strong hands free to use in hunting food, climbing trees, or fighting his enemies. He had a hand different from the paw of any animal of the forest. His thumb and fingers closed together so that he could handle such things as tools and weapons. Best of all, he had a better brain than any animal, and this made it possible for him to learn how to do many new things.



The caveman's life, when compared to that of very primitive man, presented special problems. Man's nomadic life had entailed no responsibilities except that of being a hunter. Now that his locale had become fixed his problems of food supply became more important. For the lake dweller, fish was a ready, reliable source of food. The caveman, however, had to discover the tremendous secret of plant reproduction.

As long as man was content to find wild fruits and roots he was destined to remain semi-nomadic with little control over his environment. His first attempt at growing things was probably only cultivation around existing plants. New plants that grew around the adult seemed to him to have been in the ground all the time. He must have handled seeds continually without realizing their worth. What a tremendous discovery someone made when he decided that new plants could be grown wherever he liked by the planting of an apparently lifeless husk!

It has been suggested that perhaps he first buried some of the seeds he gathered as an offering to the god of growing things and was pleased to see that the god appreciated his gift so much that many more plants grew in that spot.

In the case of larger seeds it is quite possible that someone identified the husk of a seed at the root of a growing plant. Many of the larger seeds do not entirely lose their shape until the new plant has become quite a size.



THE PREHISTORIC EARTH

THIS IS AN IMAGINARY MAP. IT SHOWS THE PREHISTORIC WORLD AS CERTAIN SCIENTISTS BELIEVE IT MAY HAVE LOOKED



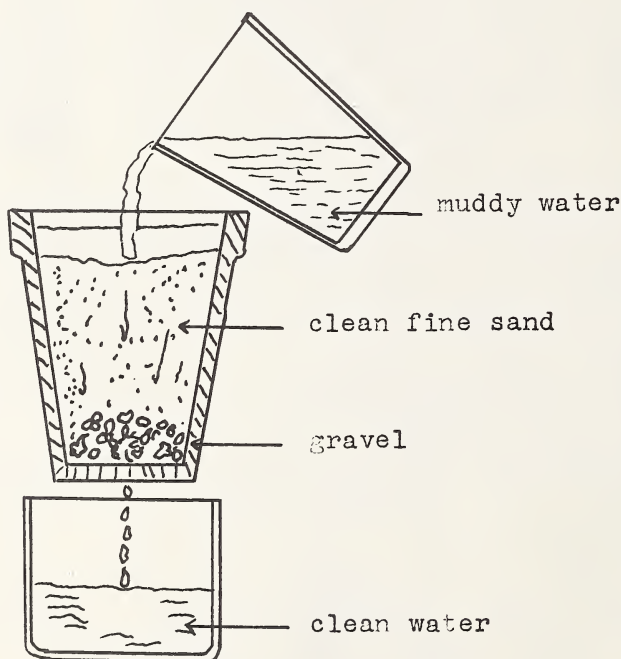
TRACES OF EARLY MAN ARE INDICATED

PROJECT A-8. Natural Filtration and Purification of Water

The problem of a pure water supply will be a constant one throughout the enterprise. As an introduction to the whole problem only three areas listed below were considered in the section dealing with primitive people. Look forward to the problems the Egyptians had, to the Roman aqueduct, to the castle well, and to our modern water systems.

1. How is it possible to clean water?

- a. Experiment with straining salt water to remove salt.
- b. Experiment to see if salt can be removed by settling.
- c. Experiment to distill water. (See picture which follows.)
- d. Experiment using filter to clean muddy water. (See picture)
- e. What does filtering not remove from water that is apparently clean? Filter pond water. Test under microscope.
- f. Find out what effect sunshine has in purifying water.
- g. Discuss why stagnant water with green scum may be purer than clear running water.



A small filter that you can make to study the effect of clean sand in removing impurities from water.

Comparison may be made between present day methods of purification of water and nature's way of purifying it.



CAN ONE MAKE WATER CLEAR?

Courtesy Photographic Branch, Dept. of Economic Affairs

2. How Do Foods Supply Water?

Construct circle or straight line graphs to show:

95/100 of lettuce is water (by weight)

87/100 of milk is water

85/100 of apple is water

77/100 of potato is water

PROJECT A-9. Fossils

1. How have modern people learned about pre-historic man?

The teacher will find that the children are interested in the story of developing life, and fascinated by the story that the rocks have revealed of the tortured changes that have occurred in the earth.

Fossil comes from the Latin word meaning "to dig." Fossils are the means by which scientists tell what plants and animals lived in past ages. About 350,000,000 years ago in the Devonian period the first plants began to grow on earth. Ferns which are a common type of fossil grew to great sizes in the Carboniferous period, 250,000,000 years ago. Fossils have been obtained from both periods.

Often a fossil is the delicate imprint of a plant on soft mud which has hardened into rock. Sometimes it is an animal's body that was buried. It decayed leaving a hollow which filled up with mineral matter in the cast of the animal's shape. Sometimes the actual bones and teeth have been preserved if the environment has been very dry. Even the flesh of ancient animals such as the mammoth has been taken from the frozen cliffs of Siberia so fresh that hungry people of the area were able to eat it. Usually, however, when we think of fossils, we think of forms that have become full of mineral carried in solution by water. They are now rock. From them we get an accurate picture of life from by-gone days.

The teacher who can stimulate his children to wonder, to inquire and to think is the teacher who has captured the true meaning of teaching, for wonder is the beginning of wisdom which may follow for those who are helped to gain skill in inquiry and in thought.

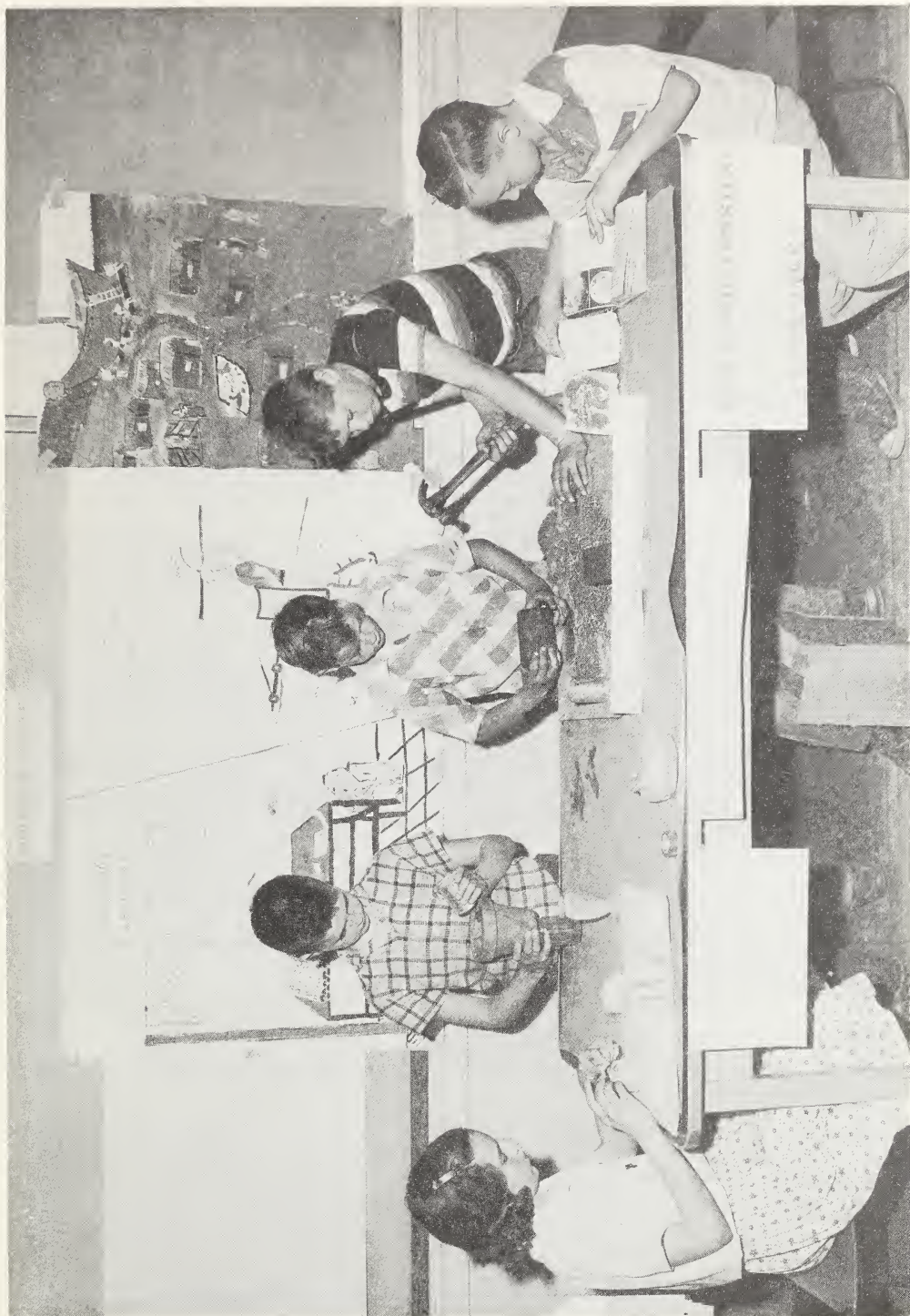
2. Can we duplicate a fossil that could have been found by archaeologists?

Each student can duplicate a fossil. Work some clay until it is soft. Press a shell or leaf on the clay until it makes a print. Lift out the leaf or shell and dry the clay in the sun.

Quite often scientists cannot move the original fossil without breaking it, so they make a copy. To do this, carefully grease your fossil. Pour plaster of Paris in the print. After it has dried, lift it out of the clay. You now have a copy of the original that the scientist would take to his laboratory for study. Don't forget that each youngster should study his fossil, to see how much has been lost in making a print. What could be learned about the plant from the print if you had never seen a plant like it?

PROJECT A-10. Construction of Model Showing Phases of Primitive Life

Consider the following important phases of living as far as primitive man was concerned.



WHAT DID FOSSILS LOOK LIKE?

Courtesy Photographic Branch, Dept. of Economic Affairs

1. Man Made Fire

First of all consider how fire was obtained in the beginning from forest fires and later from sparks struck from rocks or friction from dry wood. Consider how fire made life easier for cooking food, sending of signals, hardening and sharpening of sticks, burning out logs to make boats, etc.

2. Tool-Making Developed

Clubs were shaped from broken branches. Sharp chipped-stone tools were gradually improved by polishing until a good cutting edge was achieved. Sharp tools were tied by leather and woven grass on to sticks to make axes, spears, etc.

3. Home Life Was Made Easier

Homemakers' crafts made life more comfortable in the cave or skin tent. Pottery, weaving of baskets, making clothes from hides, weaving and even dyeing of animal hair, making of grass or leaf beds with hides for blankets all served to make life more comfortable.

4. Food Was Obtained

How man made traps for animals, how he lured them to the traps or chased them with firebrands, how man learned to get clear water by digging a water hole for himself in sand near a slough, how he picked fruit, how perhaps he stored it by drying.

5. Men Entertained Themselves

How men drew on walls of caves, carved bones, swam in rivers for refreshment, told stories about their pictures. How children played at keeping house, chased imaginary wild animals, leaped at one another from low-hanging branches, sharpened stones to make tools and developed the skills they would need as adults.

Construction Activities

The construction of a table-top model could be the major project of the class. Each group in the class could consider the best way of presenting one of the following phases indicated above.

As five groups in the class are considering methods of presenting the above topics, a sixth group could be developing ideas for construction of landscape, size of trees, people, etc. Each of the five groups should then present their special needs to the landscaping group, who should then design a set which would meet the requirements of all six groups.

If the class has had experience in the construction of three-dimensional figures using stove-pipe wire and paper covering, by all means let them do their parts of the scene that way. Basically, however, any medium, including cardboard cut-outs would be very satisfactory.

For constructing landscapes the newspaper-strips technique is probably as good as any. Crumpled newspapers, held in place by brown sticky tape, are satisfactory for hills and mountains.

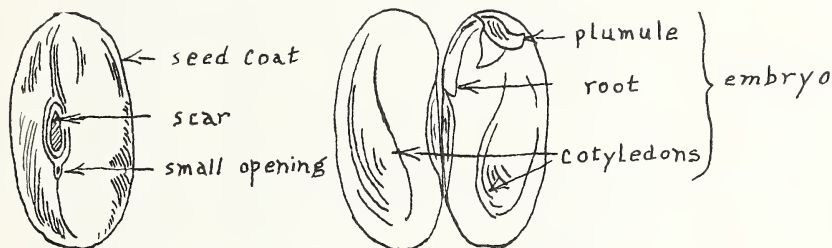
Steps:

1. Tear newspapers in strips one-half inch wide.
2. Wet strips with water. Cover crumpled paper with wet strips laid at random. Leave one end of mountains open.
3. More strips are run through powdered paste mixed thinly. Lay these strips over first layer. Let dry.
4. Remove crumpled paper from open end.
5. Reinforce first layers until a firm crust is made by applying a second and a third layer of paper. Close open end last so that the air will have had a chance to circulate freely.
6. Powdered paste accepts tempera color very smoothly.

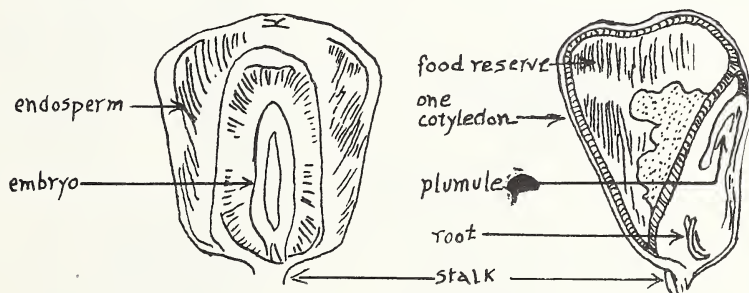
Probably in the life of man no single understanding has been more important than the one that seeds produce new plants. The study of the marvel of seeds should be one of experiment and observation. **Be sure the students study the seeds and plants themselves**—not just diagrams in a book.

I. How is a bean seed adapted to grow into a plant?

Allow the children to inspect seeds in the various stages of germination. A five or ten-power magnifying glass or a microscope is invaluable.



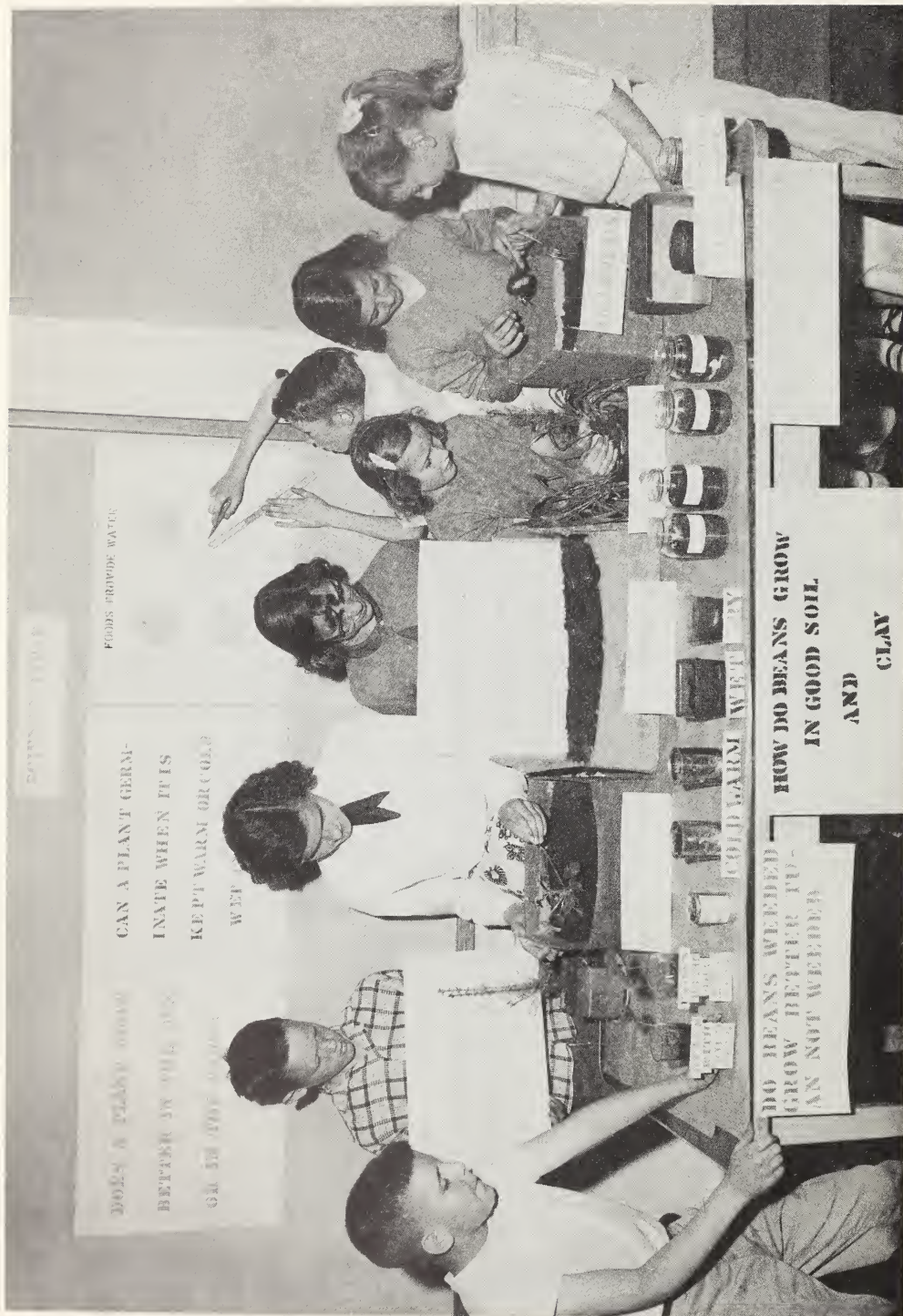
II. How is corn grain suited to produce roots, stem and leaves of a new plant?



III. What conditions are necessary for germination?

Have the youngsters experiment with growing bean seeds under conditions such as: (1) with warmth, (2) in refrigerator, (3) with and without water, (4) in good and poor soil, (5) in the light, (6) in the dark. Differentiate between germination and growing. See the picture which follows.

IV. Garden study by youngsters to discover other means of plant reproduction. Refer to Picture, page 22 for the strawberries, couch grass or quack grass, gladioli, and potatoes that one class brought to school.



FOODS GROW WATER

CAN A PLANT GERMINATE WHEN IT IS KEPT WARM OR COLD?

DOES A PLANT GROW BETTER IN COLD OR WARM WATER?

HOW DO BEANS GROW IN GOOD SOIL AND CLAY

DO BEANS WEEDS GROW BETTER IF AN NOT WEEDS?

EXPERIMENTS WITH PLANTS

Courtesy Alberta Gov't. Photographers Dept. of Economic Affairs

DRAMATIZATIONS

Play is a natural expression of children. Through this expression a wealth of learning is acquired. Anyone who has watched young children who are completely absorbed in play realizes that they imitate adult activities.

It is through imitation that children come to understand the adult world and identify themselves with it. The type of play activity in which they pretend to be adults is creative and is called "dramatic play". As children mature they tend to desire a more structured play. They prefer to re-enact a story or an episode, prepare a script to follow, or memorize lines. Children may identify themselves with persons in a particular situation and do role playing or "sociodramas". All of these types of play have a vital contribution to make to the learnings that children may achieve.

This natural desire to play at adult activities has educative value if it is carried on under the guidance of a watchful and discriminating teacher. The use of the word "play" is often misleading because adults do not realize that for the children this expression in play is a serious business and that into it go all the understanding and knowledge they have acquired thus far in their experiences.

I. DRAMATIC PLAY

Dramatic play is the type of play expression used most commonly in elementary school. It is the kind of play in which no one tells children what to say or when to say it. There is no memorization. Dramatic play is done by the group for its own expression of what has been learned; there is no dramatization for an audience. Dramatic play leads on and provides a motivating factor for research construction, and other experiences. A topic such as **A Day in the Life of a Cave Family** could be used most effectively in Problem B.

II. DRAMATIZATIONS

A dramatization differs from dramatic play in that it is more structured, it requires more memorization, it is less creative and takes more planning. Grade VI children usually prefer this type of play. The dramatization of a story the children have read involves the reconstruction of the most dramatic incidents into a form which will lend itself to re-enacting. It might well be that out of the information previously gained from an enterprise the children would create an original dramatization which would depict episodes and incidents of interest to them. For example, the events surrounding the planting of the first seed are the kind that the children enjoy dramatizing.

III. ROLE PLAYING

Role playing offers another type of drama that may be used by young people during the development of an enterprise. The identification with the character to be depicted helps children to see themselves in different relationships, widens their social horizons, and aids them to see life around them in a deeper perspective.

For this enterprise consider such roles as the Egyptian pharaoh, the Roman slave, the medieval English king, the pioneer mother, the modern family unit, etc.



Courtesy Photographic Branch Dept. of Economic Affairs

AUDIO-VISUAL AIDS FOR PROBLEM A

Filmstrips:

See also Filmstrip Catalog under Gd, III—"How People Live Without Machinery", pp 41 - 43

Man of Long Ago (Curr.) PK-2253

The Age of Mammals (Life) PK-2117

Reptiles Inherit the Earth (Life) PK-2142

How Plants Live and Grow (D. Mail) P-17

The Plant Kingdom (D. Mail) P-1208

Parts of a Flowering Plant (Curr.) PK-2198

Films:

The Stone Age T-1210

The Bronze Age T-1211

The Iron Age T-1212

Every Drop a Safe One T-47

Pipeline to the Clouds TK-967

Water—Friend or Enemy TK-32

Plant Growth T-390

How Beans Grow Q-115

Problem B

How Did Early Man Find Shelter In North America?

The caveman found ready shelter in the mild climate of the eastern Mediterranean, but in his travels in North America he found conditions entirely different. The land was flat or rolling and the climate severe in winter.

Let us go back to the time of the Eskimo and Indian settlement and consider how we would adjust ourselves to conditions after leaving Asia.

1. If we arrived in summer, what weather would we enjoy?
2. If we arrived in winter, what weather would we experience?
3. What animals would we find for food in the Arctic?
4. What animals would we find for food on the prairies?
5. How could we provide ourselves with a shelter in the north?
6. How could we heat our homes in winter?
7. To live together on the prairies we would need rules. Which ones would be reasonable?

Concepts to be Considered:

HOW DID EARLY MAN FIND SHELTER IN NORTH AMERICA?

A survey of the Eskimo and North American Indian is always interesting to grades four to six. The last enterprise about these people would probably have been in grade four, so reference books should be of interest to many of them.

The travels of early people from China across to Alaska and down the inside of the Rocky Mountains suggest an excellent opportunity to review the topography of eastern Asia and north-western North America. As the trip progresses it is probably important to have the children recognize the important relationship that exists between climate and plant life, and between climate and animal life.

The Eskimos and Indians who migrated from Asia originated from the same racial group. The Indians came first, about 20,000 years ago when Alaska and Asia were joined. They found that the coastal area of Alaska was ice-free and that there was a natural route down through the open eastern part of the Rocky Mountains. They probably wandered along in small family groups following herds of elk or caribou. They came for hundreds, almost thousands of years in small numbers until they covered the whole of the North American continent. Later, that is about 10,000 years ago the waters closed over Bering Strait and about 2,000 years ago the Eskimo came by boat to Northern Canada.

As in the previous two problems the people and their homes are of primary importance. Try to assist the students to understand how these people adapted themselves to local conditions and in so doing changed the pattern of their ways of living. Consider such projects as:

- B—1. Review reasons for climate of the Arctic.
- B—2. Consider distances from Siberia to Northern Canada. Use a globe and compare with other migrations.
- B—3. Make a comparison of average temperatures and rainfall of parts of Canada with those of the Mediterranean area, where man was able to live in caves.
- B—4. Construct and operate a tallow lamp.
- B—5. Demonstrate hot air rising.
- B—6. Locate Indian tribes in Canada.
- B—7. Consider the value of a double tent for winter. Compare with insulation in modern homes.
- B—8. Consider how Eskimo clothing is constructed to insulate the wearer from the cold.

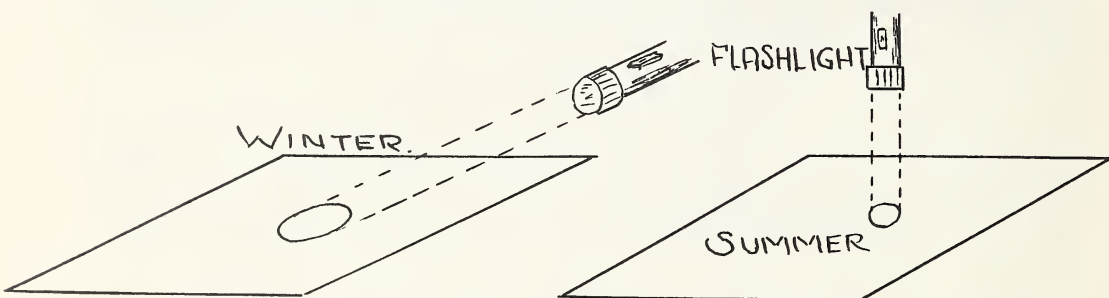
REFERENCE MATERIAL FOR SLOWER READERS

Much of the reference material about Eskimos and Indians has been written at the grades three and four levels. The above topic presents a genuine opportunity for the slower readers in Grade VI to do much more research and free reading than the amount that is possible for them in the usual Grade VI enterprise.

SUGGESTIONS FOR CARRYING OUT TEACHER AND STUDENT PROJECTS

PROJECT B—1. The Climate of Arctic Regions.

- I. Introduce the class to the polar map through the use of the globe. During use of polar map emphasize the proximity of the so-called distant countries.
- II. The heating effect of the sun depends upon the angle at which its rays strike the earth.

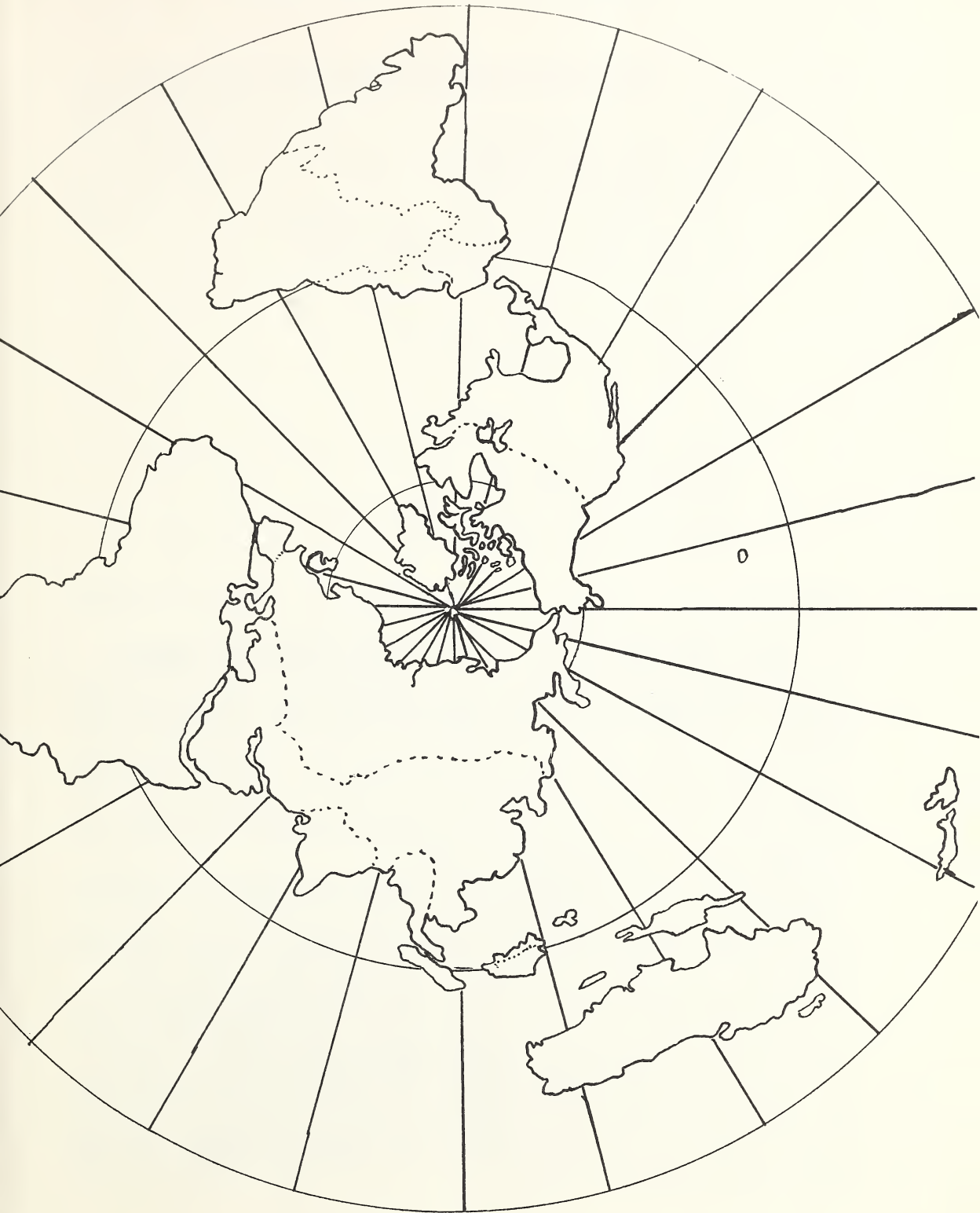


- III. The heating effect of the sun depends upon what happens to the rays when they strike the earth.

	By water	By Land
Reflection	very much	some
Absorption	large	very much

Compare effect of sun's rays upon a pan of earth and a pan of water.

POLAR PROJECTION MAP OF THE WORLD



AUDIO-VISUAL AIDS FOR PROBLEM B

Filmstrips:

Indian Houses (Curr.) PK-1819
Indian Food (Curr.) PK-1820
Indian Clothing (Curr.) PK-1821
Weather (E.B.F.) P-1388
Eskimos of Alaska: Summer Days (Curr.) PK-1142
Eskimos of Alaska: Winter Days (Curr.) PK-1144
Climate (J. Handy) PK-2004
The Sun, Weather Maker (Curr.) PK-2243
Climates (Y.A.F.) PK-2814
Heat is Transferred (Y.A.F.) PK-2813
We Make a Fire (E.B.F.) P-1844
The Arctic Tundra (Life) PK-2566

Films:

Hunters of the North Pole T-782
Eskimo Children T-140
Eskimo Summer TK-450
How to Build an Igloo TK-736
Indians of the Plains: Life in the Past, TK-1043
Life in Cold Lands, T-1195

Problem C

How Did Man First Settle In a Permanent Home?

The caveman, Eskimo and Indian lived a nomadic, tribal life. However, the settlements of the Tigris, Euphrates and Nile River valleys were probably the first examples that we have of man claiming a piece of earth as belonging to him and his family.

It is among these people that we see the first beginnings of science as we understand it today. Most earlier groups could make fire, chip stone tools, weave baskets and make pottery. Their work was often quite skilled but it lacked an important property of science. There was no written record of their work. One generation can build on the work of the previous one if there are written records, for it is through records that rules can be made, tested, broken and re-made.

About 3,000 B.C. the Sumerians in Mesopotamia (land between the rivers) began recording their knowledge. The Egyptians recorded knowledge also and they left more evidence and record of their inventions.

Man's progress has sometimes been related to his knowledge and use of metals. The Stone Age lasted in Europe until about 2000 B.C. It did not last as long in Egypt or Mesopotamia where copper, bronze and even iron were used 4000-5000 years ago. It is thought that the ancient Assyrians knew how to smelt iron and also make steel.

In the beginning the first metal extracted from rock was probably copper because it would melt at a fairly low temperature as compared to other metals. Probably one day tiny streams of copper ran out of rocks that had been placed in a camp fire and later lumps of cooler metal were examined, pounded, shaped and eventually use for tools.

The Sumerians of Mesopotamia left other very real contributions to civilization also. The desert was irrigated from the rivers after they had been dyked to prevent floods and marshy spots had been drained. As a result, for the first time in history, people raised more food (barley, beans, dates, grapes, olives) than they needed, so that it was possible to support a non-producing group of artisans, merchants etc. This resulted in the growth of cities and urban life began. Problems of government, necessities for laws arose. Civilization became a reality.

In Egypt science developed to the point where men could measure time, weight and mass. These were tremendous achievements. Measurement was so accurate that the angles of the corners of the stones in the Great Pyramid differ from 90° by only $\frac{1}{300}$ of a degree and length of sides of 254 yards are equal to within $\frac{2}{3}$ " and show the ability to put a geometer's plans into practice.

Our problem, therefore, could be to show how the Sumerians and Egyptians built upon the skills of their ancestors, and to show what conditions made the changes possible. If we again could put ourselves in the place of the early Egyptians we could consider the following problems:

1. What kind of valley would we discover?
2. What happened to the valley throughout a yearly period?
3. What have we already discovered about growing food?
4. What could we use to construct a shelter?
5. What advantages and disadvantages are there in such a shelter?
6. What would we need as tools to construct such a home?
7. If you needed help, where would you find some?
8. Because of the narrow valley we would find our neighbours living very near. What special problems would be created?
9. How would you arrange for help in growing and harvesting food?
10. How would you obtain drinking water?
11. What would you be able to do with your spare time?

Concepts and Activities to be Considered:

HOW DID MAN FIRST SETTLE IN A PERMANENT HOME?

Of importance to our sequence of showing how man acquired new skills is the understanding that (1) the Egyptians or Sumerians settled permanently in one location, and (2) they based their civilization upon slave labour. They were able to accomplish so much because the problems of food and shelter did not occupy all their time. They had an opportunity to develop skill in warfare to conquer adjacent tribes which were used as a labour force not only in the construction of stone buildings but in their homes as servants.

Teacher and student projects might include:

- C—1. Construction of model of Nile River showing height of land to the south.
- C—2. Consideration of movement of man from Garden of Eden area across Arabia to the Nile Valley and south to central Africa.
- C—3. Correlate flooding of Nile with model constructed in the first project.
- C—4. Consider water table, wells and springs.
- C—5. Experiment making sun-dried bricks from clay, from soil, from clay and straw. Test.
- C—6. Measure insulating quality of bricks.
- C—7. Use clay to construct utensils by coil method. Decorate.
- C—8. Survey development of beds and storage of extra clothes.
- C—9. Consider types of musical instruments invented by the Egyptians. Construct a stringed instrument.



Courtesy Photographic Branch, Dept. of Economic Affairs

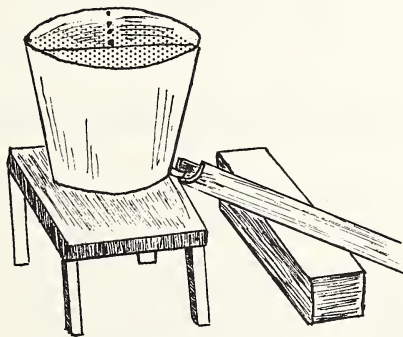
- C—10 Inspect samples of linen and cotton cloth.
- C—11 Compare interest in appearance as shown by Cavemen, Indians, Eskimos, African tribes, and Egyptians. What is colour in people?
- C—12 Consider Egyptians' homes in terms of Canadian climate.
- C—13 Review science concepts developed by Egyptians
- Various ways of measuring time,
 - Inclined plane,
 - Friction reduction by use of tallow,
 - Use of lever in shadoof,
 - Use of stars to locate buildings
 - Unequal heating of surfaces,
 - Division of work.
- C—14 Collect samples of minerals and rocks such as used by Egyptians.
- C—15 Consider general formation of rivers in terms of silt, canyons, erosion, deltas etc.

SUGGESTIONS FOR CARRYING OUT TEACHER AND STUDENT PROJECTS

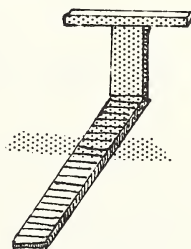
Project C—13

- (a) Egyptians told time by the stars though the stars did not keep time with the sun but rose about four minutes earlier each day. Egyptians used the rib of a palm leaf having a slot cut in the base and a plumb line hanging from the tip. The hour watcher would set himself in line with the pole star which was low on the horizon. Using the instrument he had created it could be seen that the stars revolved about the poles.

Plans should be made to have a regular star-watching period at 7:30 p.m. each evening over a two to three-week period to keep track of the movement of a number of important constellations. Rough sky charts would show the change in position over the period studied and indicate how much in error this method of telling time is.



WATER CLOCK



SUN DIAL

Methods of dividing up the hours of sunshine on a shadow stick will present interesting problems. The water clock should run through a 24-hour period. It may present some problems in slowing or speeding the flow of water. It should be interesting to note whether the group detect a variation in this method of measuring time on a cold day or a warm day.

AUDIO-VISUAL AIDS FOR PROBLEM C

Filmstrips:

Growing Up in Ancient Egypt (P.S.P.) P-277
Life in Egypt (Curr.) PK-1772
The Nile Flows Through Egypt (B.I.F.) P-1548
Selim of Egypt (Y.A.F.) PK-1737
They Live in Egypt (B.I.F.) P-1546
Ancient Egypt (Life) PK-1665
Ancient Egypt (Egyptian Embassy) P-2087
The Story of Underground Water (E.B.F.) PK-2742
Ground Water (S.V.E.) P-295
Making Bricks for Houses (E.B.F.) PK-2742
How Man Learned to make Cloth (P.S.P) P-275
Story of Clothing (Curr.) PK-2235
History of Telling Time (Y.A.F.) P-1399
The Night Sky (E.B.F.) PK-2678
What is In the Sky (Curr.) PK-2191
The Story of Machines (Curr.) PK-2392
The Story of Rivers (E.B.F.) PK-2741
The Work of Rivers (Hulton) P-2107

Films:

How a Desert People Live, T-447
Wanderers of the Desert, T-1113
2000 Years Ago in Palestine: The Day's Work, T-572
2000 Years Ago in Palestine: The Home, T-695
2000 Years Ago in Palestine: The School T-694
2000 Years Ago in Palestine: The Travellers T-573
Ground Water T-204
Sculpture of Land by Rivers, T-614
The Making of a River, T-1076
Simple Machines, T-27
The Work of Rivers, T-134
Making Bricks for Houses, T-489
How Many Stars, T-1053

Problem D

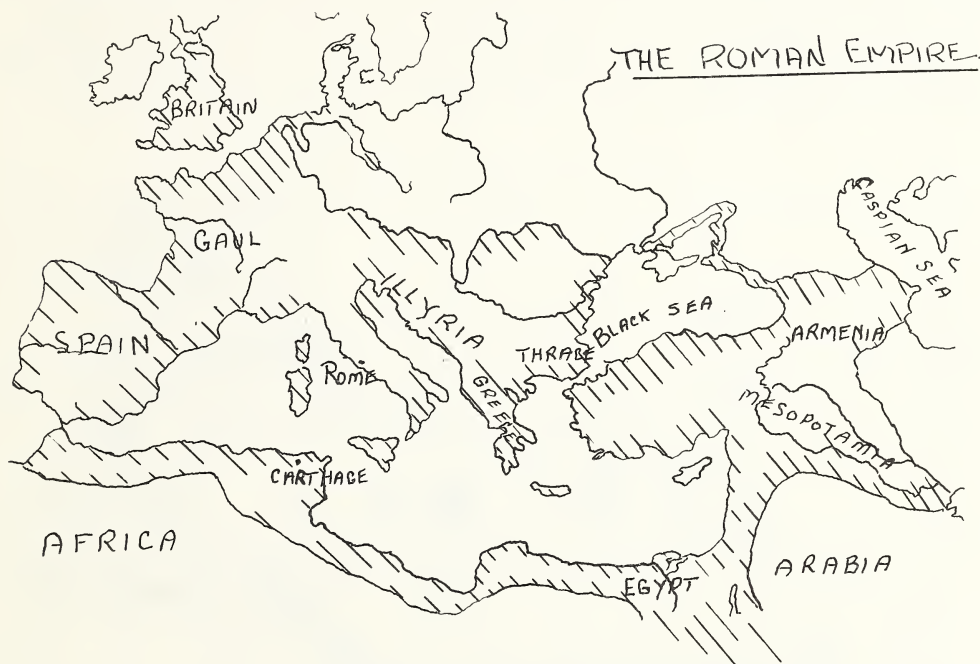
How Did Man Improve Upon the Egyptian Home?

Although the location in time and place of the Roman and Greek civilizations is very close to that of the Egyptian important changes were accomplished by the former. Consideration of these changes could logically be another step in the development of man's scientific knowledge.

Considering progress from the standpoint of metallurgy it is said that at the siege of Troy copper weapons were used in the last "copper weapon" war. Soon after that time at any rate, tin was combined with copper because the ancients found that they could make harder, sharper tools with the new substance called bronze. Thus began the Bronze Age. It will be recalled that the Romans came to Britain in search of tin which they found there in abundance. That was before the time of Christ. The Romans were "bronze weapon" warriors who searched far and wide for the materials they needed for war.

The approach to the study of Roman and medieval homes could be different from the one used in the previous problems. The Italian peninsula did not support the Roman people: their civilization was dependent upon the natural resources of surrounding territories conquered by their armies and navies. Consequently, before studying the home life of the Roman family, a picture of the Roman Empire should be developed by the class:

1. Where were the Roman armies organized?
2. What countries did they conquer?
3. What did they do with the areas that they made part of their country?
4. How was the Roman concept of obtaining labour and food similar to that of the Egyptians?
5. What special problems did the Romans have that the Egyptians did not experience?
6. What special advantages did the Romans have over the Egyptians?
After the class has considered problems similar to the above, a development of Roman home life might suggest the following questions:
7. If you were living as a Roman, what would you like to change in the Egyptian home?
8. Were the Romans able to do the things you suggest?
9. What influence did the Greeks have on Roman houses?
10. The Greeks believed in simplicity and usefulness. How was this shown in their kind of home?



HOMES OF THE EGYPTIANS, GREEKS AND ROMANS

In speaking of the homes of these people we must remember that there is considerable difference between the homes of the poor and those of the rich. The homes of the poor everywhere in those times did not vary greatly. One-roomed huts made of reeds daubed with mud or covered with sun dried brick were the most that the poor workers ever had.

Only the rich had the advantage of the work of carpenters, stone cutters and other artisans. In Egypt wealthy men had large well-built houses having wooden frames covered over with brick. Latticed windows let in air on the north side of the house. Usually there was one large living room on this north side where the deep windows caught any cooling breeze. Off this room were any number of smaller rooms.

The living rooms were beautifully decorated with colored curtains, ceilings painted to look like the sky and the floor often painted to look like grass with pools of water and reeds on the side.

The Greek homes were slightly different in design. They were built around a court or open room. Off this were bedrooms, store room, kitchen etc. Hard earthy floors with

a pebbly surface were common. The outside walls were very plain with only an occasional side uncovered window on to the street. Slaves brought water from a spring or well. Small charcoal burning stoves were carried from room to room to provide heat.

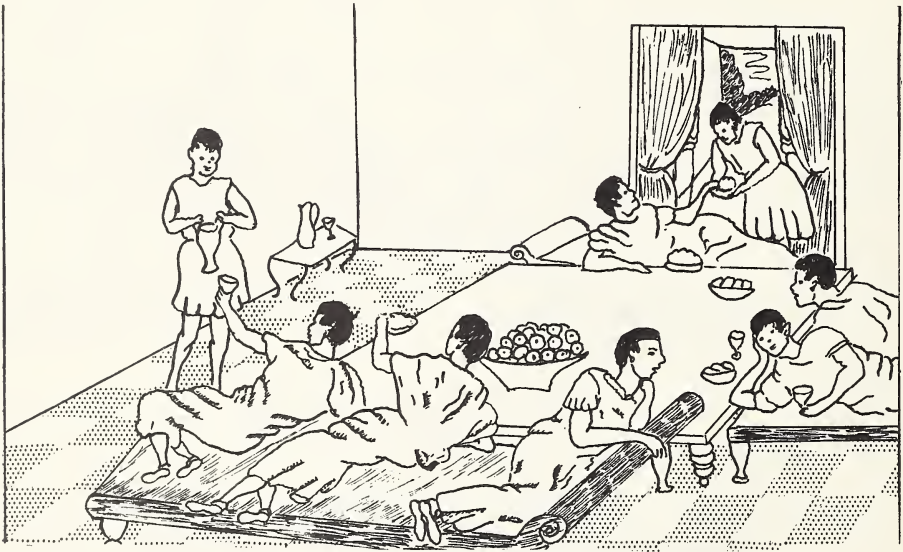
There was not a great deal of furniture but the chairs, chests and tables were beautifully carved. The Greeks used metal utensils, hand-painted vases and dishes. They believed greatly in beauty. Their ideal, almost their religion, was a belief in the importance of beauty.

In Egyptian and Greek homes music was an enjoyable kind of recreation. Even before the time of Homer there were Greek folk songs and songs about the gods, happy songs and sad songs.

Homes belonging to rich Romans were most luxurious. They had great walled gardens and often owned a summer home and a winter home, a home for solitude and a home for entertaining.

The plan of the house was much like that of the Greeks. From the doorway a long hall led to another door. On entering you would find yourself in the atrium, a room with an opening in the ceiling—a kind of sky light through which rain fell into a shallow pool below. Beyond this ran a corridor to the peristyle which was a garden court surrounded by columns. All the rooms of the house led from it. This was the center of family life.

The homes of the Romans of later days were complete with running water and sewage pipes. Some houses even had rooms heated by hot air from a central heating plant. Homes two thousand years ago were beautiful, comfortable and even luxurious.



Concepts to be Considered:

HOW DID MAN IMPROVE THE EGYPTIAN HOME?

To enable the students to see the Roman Empire as a development of the Egyptian Empire together with the Greek Empire the picture of the former as a large sprawling country comprising the world as known by the peoples of the Mediterranean is very important. Emphasis should be placed on the tremendous amount of resources available to the Roman citizen to whom life in Rome was the ultimate. Develop the idea that all roads lead to Rome.

Teacher and student projects might include:—

- D—1. Develop a map showing the extent of the Roman Empire. Superimpose modern and ancient countries on the map. Review scales of maps, and correlate with distances then and today in terms of time and convenience.
- D—2. Develop a map showing natural resources located in the Roman Empire.
- D—3. Make a survey of the foods available to Rome. A picture map showing samples of materials shipped from various countries could be constructed.
- D—4. A mural could be done by a group to show how slave labour was used in the homes.
- D—5. Study the development of various types of musical instruments. Murals showing various kinds of entertainment in the home might be interesting.
- D—6. Running water and sewage disposal were two important improvements developed in Rome. Demonstrate how liquids find their own level. Compare liquids, solids and gases.
- D—7. Develop such science concepts as:
 - (a) Wheel
 - (b) Arch
 - (c) Roman road building
 - (d) Ships in terms of floating objects displacing water
 - (e) Roman spout lamp to demonstrate capillary action.
- D—8. Consider the disappearance of the Roman home with the coming of the Barbarians.

PROJECT D-5

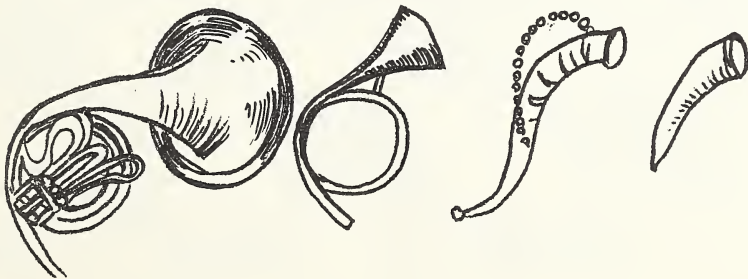
Suggestions For Carrying Out Teacher and Student Projects

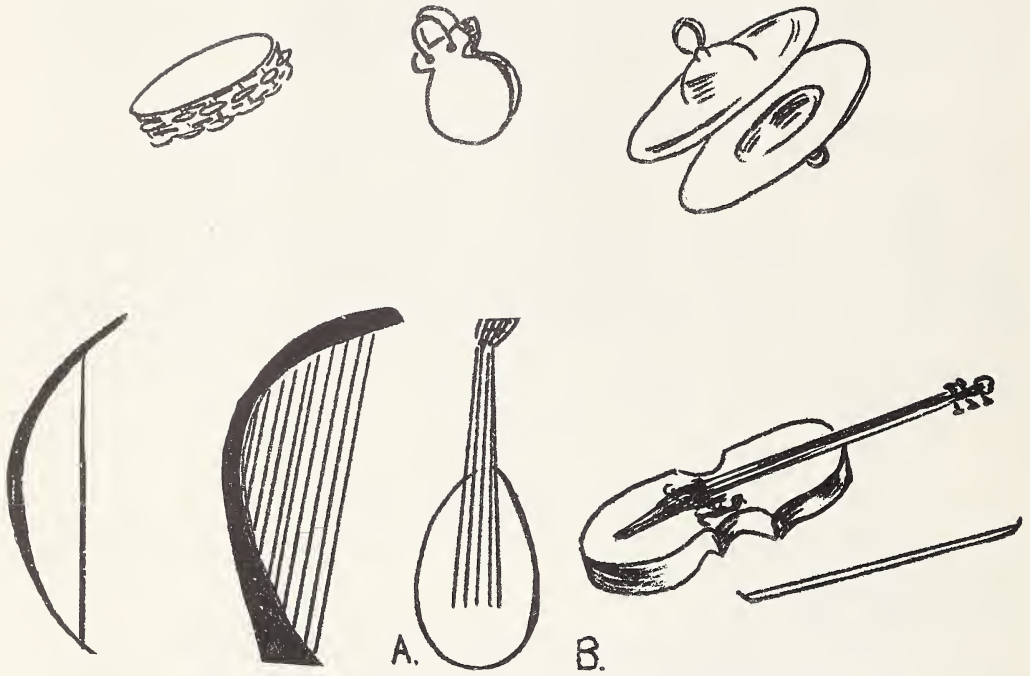
No doubt harps developed from the time that the sound of the twang of the bow-string when an arrow sped away intrigued someone who had an ear for musical sounds. One can imagine how delighted the hunter would be who added another string or two to his bow and made a series of musical sounds.

The first reed instrument was probably made from a hollow water reed, into which notches had been cut to make a variety of notes when covered.

A collection of pictures of musical instruments of various types would be a very interesting activity.

Musical instruments could be constructed from the same materials the cave man or the early Egyptian would have. If reeds are not available use willow, cutting in the spring time when the sap makes it possible to remove the center part easily.





AUDIO-VISUAL AIDS TO PROBLEM D

Filmstrips:

An Athenian Family (Curr.) PK-2052
 Athens (Life) PK-1765
 A Day in Ancient Athens (P.S.P.) P-276
 Life in Ancient Rome (Wayne Univ.) PK-1494
 A Roman Family (Curr.) PK-2054
 An Egyptian Boy (Curr.) PK-2050
 Ancient Egypt (Life) PK-1665
 A Way in Ancient Egypt (P.S.P.) P-278
 Growing Up in Ancient Egypt (P.S.P.) P-277
 Ancient Egypt (Egyptian Embassy) P-2087
 Buoyancy and Archimedes' Principle (J. Handy) P-383

Films:

Ancient Rome T-677
 Ancient Greece T-951
 Ancient Egypt T-912



How Did Man's Home Become a Castle?

As life in the Roman home was dependent upon an economic condition created by successful warfare, life in England and France during the medieval period depended upon the political conception of rule of a country by divine right. It seems necessary and logical to develop for the youngsters a picture of a king and noblemen owning all the land before any evaluation of the homes of the period can take place. Questions similar to the following should be answered:

1. If you were told that you owned England in 1066, how would you organize the country to make sure that you remained king?
2. Who would try to take your place?
3. Whom would you ask to help you organize the country?
4. Where would your helpers have to live?
5. From what would you have to protect your country?
6. How would your people be able to protect themselves against other people who wanted the land?
7. What modern weapons would you have liked to have to protect yourself? What dangers would there be in having these weapons?
8. What weapons had been developed by 1000 A.D.?

From the preceding questions the idea of a fortress to protect people in an area is a logical conclusion. The next step is to consider the special problems of building one which is going to be comfortable to live in.

9. What materials could a fortress be built from?
10. What advantages and disadvantages are there in these materials?
11. What shape would provide the best protection?
12. How are the windows and doors going to be designed because of the need for protection?
13. How does the climate of England compare with that of the Mediterranean lands?
14. How is the English climate going to force one to change the homes that existed in Southern Europe and Northern Africa?
15. What effect has the castle's use as a fortress upon the storage of food?
16. What effect will it have upon the water supply?
17. What special dangers to health are there during a siege?
18. How would you be able to use your castle for visitors?
19. What entertainment could you supply?

Consider once again the importance of the various metals in the lives of the people of the Middle Ages. Silversmiths and goldsmiths made beautiful objects and iron was beginning to come into its own.

Iron, which is a very useful metal to us, was smelted by the Egyptians and Assyrians, as has been stated, but the metal was so hard to reduce that no quantity was produced for everyday purposes.

In the early days of iron smelting a kind of furnace was constructed high up on a hilltop. The fire and the ore were covered over with dirt leaving a kind of chimney at the top and openings at the bottom where bellows were used to drive in extra air. This type of furnace produced much heat. But because iron was so difficult to obtain and such a precious metal it is said that at the time of Edward III of England, the iron pots and frying pans in his kitchen were classed with the crown jewels as being among his most valued possessions.

In the Middle Ages alloys of all kinds were tried out. Zinc and copper were combined to make brass. Pewter, originally an alloy of tin and lead, was a favorite substance for the making of plates and a variety of dishes. By the 16th century iron swords were the most popular of weapons and iron was used for bars for strengthening doors by means of locks, hinges and bands but it was not until a little over one hundred years ago that iron ships began to replace wooden ones. Iron was thought to be too heavy to float.

Concepts and Activities:

HOW DID MAN'S HOME BECOME A CASTLE?

Of special importance in the above problem is the change in climate and its effects upon homes in England.

Teacher and student projects could include the following:—

- E—1 A comparison should be made of English and Mediterranean climates.
- E—2. Report of fireplace construction.
- E—3 Eating utensils of medieval times could be made the topic of a report.
- E—4 Spices. Discuss types of spices, their original use: make a map of growing areas, displaying collection of samples.
- E—5 Report of minstrel as travelling newspaper.
Attempts by students to do likewise with current themes would be interesting.
- E—6 Use of books for information and as entertainment in medieval homes should be compared with today's use.
- E—7 Compare health habits with those of Romans.
- E—8 Science concepts:
 - (i) Study of siege machines for discovering principles of lever, wheel, inclined plane, screw, etc.
 - (ii) Use of windlass
- E—9 Health habits:
 - (i) Personal cleanliness.
 - (ii) Eating habits

PROJECT E-2

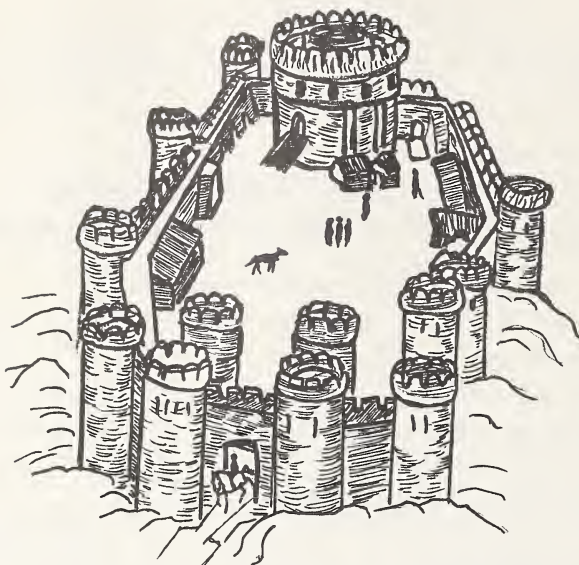
Suggestions for Carrying Out Teacher and Student Projects

Homes in Britain needed fires in them for heat as well as for cooking. Earlier homes had only a hole in the roof through which the smoke might escape. The result was that walls and ceiling were frightfully blackened by soot. Imagine how the smoke must have injured the eyes of those living in such a home.

Gradually the fireplace took the place of the fire in the center of the room and as man's knowledge and powers of observation grew the fireplaces improved. Even today in Britain this form of heating persists not because it is an effective or economical way to heat a room but rather for the color and interest there is in having a fire burning on an open hearth.

Experiment to see:

- (a) what materials burn with least smoke.
- (b) that hot air rises and carries carbon with it.
- (c) that smoke does not rise but goes down if the air contains much moisture.
- (d) why furnaces have flues with one or more bends to prevent the air sweeping down and carrying the smoke into the basement.
- (e) why smoke shelves in the chimneys of fireplaces are built out to provide the same diversion of the smoke and prevent down drafts blowing the smoke into the room.



AUDIO-VISUAL AIDS FOR PROBLEM E

Filmstrips:

Evolution of the English Home: Stone Age to Roman Occupation (C. Ground) P-779

Evolution of the English Home: Anglo Saxons (C. Ground) P-780

Evolutions of the English Home: Middle Ages, 1066 - 1485 (C. Ground) P-781

Evolution of the English Home: Tudor, 1485 - 1603 (C. Ground) P-782

Castles (Curr.) PK-1629

Castle Life (Curr.) PK-1635

Simple Machines (E.B.F.) P-1381

Films:

Medieval Castle T-704

Problem F

How Were Pioneer Houses a Development of Skills Used to Build Homes In Other Countries?

The pioneer Canadians left lands which were becoming industrialized. Consequently, they brought with them some of the culture that had been developed in Europe during the previous 2000 years. During this time the Indian had changed his way of living very little. No wonder the pioneer had no difficulty in chasing the Indian deeper and deeper into the Canadian wilderness. Our problem seems to be one of showing how the pioneer people used tools and techniques learned in Europe and applied their skills and equipment to develop a new civilization in North America.

1. If, in 1800, you were a French person planning to become a new settler in Canada, what equipment would you like to be able to bring with you? Again, you are asking the youngster in your class to put himself in the place of a person living in a certain time.



Courtesy Photographic Branch, Dept. of Economic Affairs

2. What difficulty would you have in bringing equipment to Canada?
3. Where would you arrive in Canada?
4. How would you get to your settlement?
5. How would you arrange for land upon arriving?
6. How would you pick out your land?
7. What would be your first concern upon arriving at your homestead?
8. How would you arrange for temporary shelter?
9. How would you construct a permanent home?
10. What equipment would it be necessary to supply after arrival?
11. What special dangers would there be to you and your home?
12. How would you protect your home for winter?
13. How would you supply your house with water?
14. How would you arrange for food the first year?
15. How much land could you clear the first year?
16. How much food is required by your family?
17. What animals would be important to your family?
18. How could you store foods from one season to the next?
19. How could you earn money to buy, or how could you produce things to barter?
20. What would you be able to buy for your home?
21. What entertaining could you expect to do?
22. What could you do with your leisure time?

Concepts to be Considered:

**HOW WERE PIONEER HOMES A DEVELOPMENT OF SKILLS USED
TO BUILD HOMES IN OTHER COUNTRIES?**

Certainly the life that Europeans left had a very great effect upon the way in which they lived in Canada. However, the problems they experienced in obtaining food, clothing and shelter were so overpowering that indeed they began a new life. The answer to the theme question might show how the pioneer, despite technological advances, was forced to adapt his life to the resources that were available.

Teacher and student projects:

- F—1. Describe the trip from Europe to North America in terms of:—
 - (i) description of vessel
 - (ii) experiences while crossing.
 - (iii) time of passage
 - (iv) Ports of Europe and Canada
 - (v) Impressions of Canada.
- F—2. Compare modern travel by ship and air today with that on pioneer vessels.
- F—3. Demonstration of model steam engine.
- F—4. Map of Canada showing early settlements.
- F—5. Description of iron and steel making.
- F—6. Comparison of types of soil.
- F—7. Bread-making (yeast).
- F—8. Compare life as a pioneer with life in Europe.
- F—9. Compare life as a pioneer with that of an Indian.
- F—10. Study of cloth-making machines.
- F—11. Study effect on health of being a pioneer, especially as compared to living in Europe.
- F—12. Consider the farming methods of pioneers. Compare with modern farming.

Project Development under F-12

Compare the use of steam with use of gasoline.

The pioneers in Canada were using threshing machines operated by steam in the 1850's. Today steam threshing machines or tractors are museum pieces, gathered in collections of old farm machinery.

If possible arrange a field trip to see such displays of old machinery or locate an old steam threshing engine for inspection.

Work out a list of the advantages and disadvantages of steam versus gas.

Demonstration to show how steam pressure can be made to work:

Heat a little water in a test tube not too tightly stoppered. Keep the tube at arm's length and point away from your body. Questions such as the following might be asked:

What was the cause of the explosion?

Why is the cork forced out?

What caused the noise?

In discussing the gasoline engine consider:—

- (i) When the first oil well was drilled in Canada.
- (ii) What was oil used for in the first place?
- (iii) What property of gasoline made it possible for inventors to produce the gasoline engine?



AUDIO-VISUAL AIDS FOR PROBLEM F

Filmstrips:

The Hudson's Bay Co. (Unicorn Ltd.) PK-1618
Pioneer Life in Upper Canada (N.F.B.) P-1547
19th Century: A Farm Kitchen (Curr.) PK-2293
19th Century: Homespun Linen (Curr.) PK-2295
19th Century: The Store (Curr.) PK-2292
19th Century: The Blacksmith (Curr.) PK-2290
19th Century: The Village (Curr.) PK-2289
The Wilderness Frontier: The Farm Home (Curr.) PK-2527
The Wilderness Frontier: A New Farm (Curr.) PK-2526
The Wilderness Frontier: The Stockade Settlement (Curr.) PK-2524
How Man Learned to Make Cloth (P.S.P.) P-275
American Transportation: Horseback to Jet (Life) PK-2141
The Queen Mary (U.K.I.S.) P-674
Land Transportation (Curr.) PK-2212
Water Transportation (Curr.) PK-2213
Air Transportation (Curr.) PK-2214
Story of Trains (Curr.) PK-2215
How We Get our Iron and Steel (Y.A.F.) P-1434
Petroleum (N.F.B.) P-2766
Oil from the Prairies (Curr.) PK-2717

Films:

Age of the Beaver, T-910
Family Tree, TK-705
Prairie Conquest (Agricultural settlement in Canada—43 mins.) TK-1153
Ukrainian Winter Holiday, TK-44
Colonial Children (New England) T-192
The Pilgrims, T-1200
Puritan Family in New England, T-1131
Colonial Life in New England, T-1123
Colonial Life in the Middle Colonies, T-1124
Airplane Changes the World Map, T-1
Eli Whitney (cotton gin), T-831
Petroleum T-299

Problem G

How Has Modern Science Made Contemporary Homes Possible?

The basic settlement of Canada was completed by 1900. During the past fifty years we have changed from a pioneer country dependent on our own manual labour to an industrial country dependent upon machines. Our lives at home and at work have undergone a similar change.

To take a brief look at metals once again we note that today newer lighter metals such as aluminum and magnesium are used for aeroplanes, automobiles, furniture, building and in countless smaller articles.

To attain their final shape the metals are cast, rolled, forged or welded. The rolling of powdered metals into solid shapes is a new process, which is very popular for some types of small wares. Alloys are made by mixing more than one kind of powder.

The age of iron is not over, but already many new materials such as lighter metals and plastics are beginning to make iron somewhat less important.

The solving of the theme question should help students to understand the division of labour that has taken place and to see the change that it has made in our home life.

Once again let us pretend—you are going to build and furnish a house.

1. How would you choose a piece of land?
2. What would you expect to pay for it?
3. What would you have to arrange for on the land before you started building?
4. What is going to determine the size of your house?
5. What should determine the shape of your house?
6. What should the arrangement of the rooms be?
7. What storage place should a home have?
8. What permanent equipment should you plan in your home?
9. What shape can the roof have?
10. What materials is each shape of roof made of?
11. What advantages and disadvantages has each shape?
12. How can you keep the summer heat out of your house?
13. How can you keep the winter heat in?
14. What can you use for summer cooling?
15. What kind of furnaces are there?
16. What outside finishes could you choose from?
17. What equipment would you like for preparing foods?
18. How would you arrange for desirable sleeping areas?
19. What kinds of metals figure very largely in our way of life?
20. How would you arrange for leisure-time activities?
21. How would you arrange for entertaining?

Concepts and Activities:

HOW HAS MODERN SCIENCE MADE CONTEMPORARY HOMES POSSIBLE?

Although tremendous improvements have been accomplished in the field of science during the past fifty years, many sociologists claim that we as people have not advanced accordingly socially. **The interaction between members of the household is most important** in this unit. As a major project, individually or in groups, an attempt should be made to design houses that consider each member of the household. What part in household living does each member of the home play? What responsibilities has he? How can he consider the place of the others at home?

Development of the major project of designing and constructing a model home might include the following:

- G—1. Judge appearance of nearby homes by observation.
- G—2. Have questionnaire prepared by students to be filled in by parents regarding their definition of a home.
- G—3. Have youngsters use their own homes as a source of material.
- G—4. Visit homes and buildings that are under construction.
- G—5. Have room sizes at home measured for desirable arrangements.
- G—6. Trace movements throughout house to determine pathways.
- G—7. Consider doors and windows in terms of weather and use.
- G—8. Inspect various types of windows for insulation.
- G—9. Attach to model samples of:
 - (i) roof materials.
 - (ii) plaster and stucco
 - (iii) copper and galvanized pipe.
 - (iv) Types of woods used in finishing (Correlate with pictures of trees)
- G—10. Describe the making of cement.
- G—11. Construct a model electric motor.
- G—12. Consider problems and dangers of lighting houses.
- G—13. Visit local water supply, electricity supply and sewage disposal unit.
- G—14. Consider operation of:
 - (i) electric refrigerator
 - (ii) electric toaster and iron
 - (iii) electric stove.
- G—15. Report about modern baking materials such as baking powder.
- G—16. Compare number of homes in surrounding district with the number ten years ago.
- G—17. Prepare a list of 5 or 6 characteristics that are of prime importance for successful co-operative living in the home.
- G—18. Consider how science has provided more time for leisure. How has science made leisure time more enjoyable?



Courtesy Photographic Branch Dept. of Economic Affairs

EXPERIMENTING WITH ELECTRICITY

AUDIO-VISUAL AIDS FOR PROBLEM G

Filmstrips:

Building a House (E.B.F.) P-1228
How We Get our Glass (Y.A.F.) P-1433
How We Get our Cement (Y.A.F.) P-1532
Timber from Forest to House (N.F.B.) P-1001
Man's Shelter Today (P.S.P.) P-1099
British Columbia Forests (N.F.B.) PK-2719
Electric Motors (J. Handy) P-366
Wonder of the Electric Light (Eye Gate) P-2879
All Kinds of Houses (N.F.B.) PK-1705
The Water We Drink (Y.A.F.) PK-2822
Sanitation (Y.A.F.) PK-2823
Fundamentals of Diet (E.B.F.) P-1727
A Good Breakfast (N.F.B.) PK-1598
Internal Triangle (N.F.B.) PK-1137
The Milk We Drink (N.F.B.) PK-1135
Making Bricks for Houses (E.B.F.) P-1230

Films:

The House in Which we Live, T-445
Making Glass for Houses, T-503
Making Bricks for Houses, T-489
The New House: Where it Comes From, T-1129
Shelter T-128
The Story of Electricity, T-312
City Water Supply T-71
Defending the City's Health (City Health Dept.) T-193
Every Drop a Safe One (Purification of Water), T-47
Pipeline to the Clouds (Water supply) TK-967
Sewage Disposal T-605
Understanding Vitamins T-909
How Man Made Day (Artificial Lighting) T-584
The Story of Light (Artificial Lighting) TK-1087
Water on Tap (running water—plumbing) TK-1154
Principles of Refrigeration T-852
Fundamentals of Diet T-151

CREATIVE WRITING—Done by a class studying prehistoric man

LOST

By Beverly Forbyth

I am a pre-historic woman who lived 25,000 years ago. This is a story of my adventures. I was looking for berries, nuts and roots when I finally found out I was lost. Frantically I searched for an opening which I could get out of. After searching for hours, I finally dropped in a deep slumber. When I awoke dark clouds were forming in the sky and bright flashes of light lit up the forest. A piercing scream of a mammoth was heard. I heard myself saying "I must have meat". Rain beat against my face and left me shivering. I staggered along trying to find some kind of shelter. Finally I found an old cave. When I put one foot inside a dreadful rumbling sound was heard in the distance. "A mammoth stampede" I cried. But soon the sound died away. Soon the rain ceased. I walked for miles not caring where I went. I fell down beside a cool stream. There I found six fat turtle eggs. This regained only a bit of my strength. I must have walked for miles and it was beginning to grow dark. Soon I heard the familiar sounds of my people. I was home! Home once again to join my family and friends.

A FLASH OF LIGHT

By Hilda L.

Something woke me up. I heard screaming and thumping sounds. I opened my eyes and saw animals running for their lives, then looked back and saw flashing light. It was destroying our fruit and vegetables that we lived on. All I thought was to run to the river. I jumped from the tree, started running with the animals. It got bigger, hotter and closer. Great flashes came at me, and the river was still far away. I was tired and weak but I kept going. The trees started falling and they killed animals. Finally I got to the river and jumped into the water. I tried to swim across to the other side but animals kept pushing me under. When I got up I felt drops coming down. The flashing stopped, everything was quiet again, so all the animals went to the other side and I did too. I had to find another place to sleep.

WHAT LUCK

By R. Davies

When morning came my hunger urged me to get up. I was very hungry because I had not eaten for two days. As I was climbing down I noticed a rabbit. I wanted to hurry but I remembered my sore foot. When I got down I walked slowly towards my precious prey. Keeping my eye on "Breakfast" I suddenly kicked my toe on a rock. With a squeal and a yell I went rumbling down the hill until a boulder put me to a stop. As hours passed I finally saw another rabbit. I looked around for a stone. I found one and had to fling it through the air at the rabbit . . . I missed, but I hit a giant rock. The rock hit the tiny creature unexpectedly. Before long I had supper skinned and ready to eat. Just as I was ready to feast a cute little bear cub ran off with three days' hunting. Before I could catch him his mother popped her nose around the corner. I took off. I was very angry. Finally I filled up on some berries and was asleep hoping for a better day ahead.

ONE LEADS TO ANOTHER

By Carol Lumsden

Though no thought came into my mind about it, it did look like a good hunting day. With nobody around me, no languages to speak, and not always a home to live in, I looked pretty funny, but I was happy because the sun was out, though I didn't know what it was, but it gave light. I don't know these things because I am a pre-historic man. I started out of the bush I had slept in the night before. To hunt with I use a rock, which I didn't have with me then because I could pick a rock anywhere to use as my weapon. With the wind blowing through my rough and tumbled hair I started a good day's hunting trip.

Around me were animals, bush and rocks. A rabbit was feeding on some lily pad leaves close to where I was lying with rocks all around me so I couldn't be seen. When I went to throw the rock, hitting the the rabbit, it ran into a more jungle-like thicket. Chasing him I didn't see what was ahead. Because I had hit the rabbit two sabre tooth tigers smelt the fresh blood. I was in a mess! A rabbit is too small for a sabre tooth tiger, but a thing ten times as large is more of a meal, and apparently I was the practice target for the young though still vicious cub. I tried to run though it did not do any good, —a tiger is faster. I ran down a sloping hill, not knowing where it led, and came into more trouble as the swamp was ahead. I was running too fast to stop. Splash! in I went, down and down. Not having been right in the water before I didn't know what was happening when I bobbed up to the top. Trying to keep myself up I got panicky, splashing and kicking until I found myself closer to the shore. By this time the tigers had left, not liking the water. I stretched myself out of the water and on the bank and slept until dawn. What an adventurous day!

I WONDER WHAT THESE ARE

By Peter Tolinowski

I am a pre-historic man and I live in what I find, which is usually a tree.

I have often wondered what the little blue dots are at night and the giant yellow God which gives light so I can see.

But more often I would wonder about the huge animals which I feared, but I can protect myself from smaller animals and they provide my food. I would often go for days without food, but finally I would find berries or else eat grass. I would survive through these but I suppose one day I will starve or be killed, but while I survive I'll do my best with what I have.

EVALUATION

Today and tomorrow we should be concerned with more of the student than just his ability to retain knowledge. If we are concerned with all facets, we must find further means of evaluating. In the enterprise *How Science Affected Homes Through the Ages* many opportunities have been provided for all life situations. Youngsters are expected to construct problems which could be similar to those suggested. They are expected to solve their problems by acceptable methods of research. They should use the information collected by sharing it with others in the class. They should evaluate their materials and their actions so that their undesirable and non-fruitful patterns are changed and so that their constructive patterns of behaviour are reinforced.

As a result of trying to carry on a complete program the teacher is faced, at evaluation time, with many problems:

1. What facts has each student learned about our topic?
2. What general understandings has he learned?
3. What planning did he do?
4. What attempts did he make to work with others?
5. What techniques did he use to find and collect information?
6. Was his solution to the problem constructive and complete?
7. How successful were his attempts to share information with others in the class?
8. What desirable and undesirable behaviour patterns did he exhibit in relations with his peers?

After the previous student evaluation has been completed, the teacher should be concerned with:

1. How can I reteach essential facts that have been missed by various members of my group?
2. What possibilities are there in other enterprises to reinforce general understandings in the enterprise?
3. How can I encourage and assist unsuccessful planners?
4. How can I assist members to work with others in groups?
5. What techniques were poorly used or neglected? What situations can I use to improve them?
6. How can I help students to use criteria which will help them to evaluate their solutions?
7. What can I do to assist students to share their information in groups and in the class?
8. What can I do to assist the children to use desirable behaviour patterns while working with the class?

TESTING FACTS

There are many variations in teacher-made tests that are related to day-to-day instruction. Sample questions of the more common are:

1. Essay

How have homes been influenced by the climate in which they have been constructed?

2. Recall Tests

- (a) The walls of the castle were built of.....
- (b) The metal grate used to protect the front entrance of a castle was the
- (c) Pioneers in Canada first settled along the.....
- (d) The first weapon of primitive people was.....

3. Recognition Tests

True or False

- (a) The Eskimos probably came from Africa.
..... (b) The Indian tepee was used by the Romans.

Multiple Choice

- (a) At the time of the Birth of Christ Canada was populated by (1) Eskimos and Americans, (2) Japanese and Indians (3) Egyptians and Assyrians, (4) Indians and Eskimos. (.....)
(b) Two panes of glass are used in our windows to (1) provide extra strength (2) prevent dust from entering (3) improve appearance (4) increase insulation (5) allow each pane to be thinner. (.....)

4. Problem Solving Tests

Note: This exercise is given to provide the pupil with an opportunity to learn to think, to choose, and to discard the irrelevant.

Planting Seeds

It is very important that seeds be planted under proper conditions. If we were to take a bean seed and place it between two pieces of damp cotton batting in a pie plate, would it germinate?

You are to decide which one of the ways below is most desirable as a means of planting seeds, which one next, and so on. Number them in order by this plan.

- A.....Beans are best planted in a special box in the basement early in the spring.
B.....Beans are best planted in a very cool dark place.
C.....Beans are best planted in rich soil about May 24th.
D.....Beans are best planted in heavy clay soil in a sunny location.

Below are a number of statements about planting seeds, which may have been learned with A, B, C or D above and should have some definite relationship with one of them. Read each statement below carefully. Then put before it the letter of the way above that most nearly matches it or write discard in the space.

-Soils that do not contain humus dry out very quickly.
.....To germinate all seeds warmth is necessary.
.....Seeds stored over winter should not be kept below 32 degrees.
.....The frost-free period in Edmonton is approximately ninety days.
.....Potatoes stored in a cellar grow sprouts.
.....Many flowers require three months to bloom.

TECHNIQUES TO APPRAISE PUPIL BEHAVIOUR

Many teachers have used groups of children to provide opportunities for them to work together to a common solution. Sometimes a group of from six to twelve meet around a table to organize, gather, and share information about a problem they have chosen. Other times the group is one of a number working on a common project (Project A-10). Occasionally it is a mural to be designed and painted. The teacher should have some technique, such as a sociogram, with which to see the relationships that exist amongst members of the class. Also, such occasions give the teacher an opportunity to evaluate pupil behaviours by means of a check-list previously made up.

Check-Lists for Pupils

Occasionally pupils could ask themselves such questions as:

1. Do I talk too much?
2. Do I talk loudly enough?
3. Did I work all the time? etc.

With experience they might find other questions, such as:

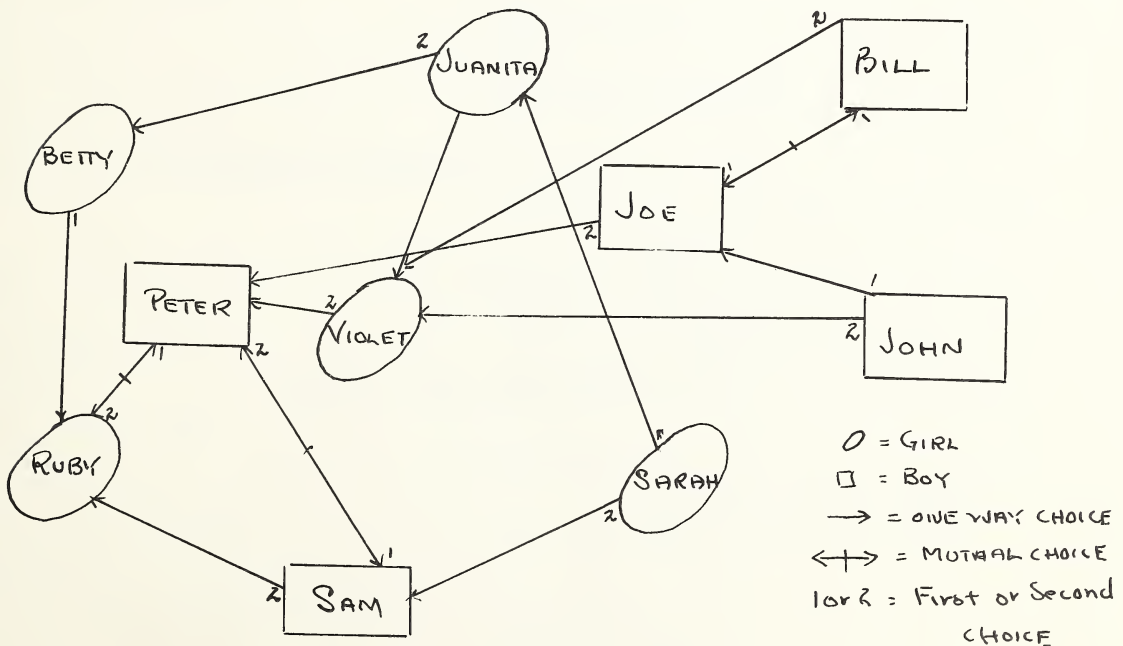
1. Did I say enough?
2. Did I help someone else to say something?
3. Did I ask any questions of the group?
4. Did I enjoy myself?
5. Did the rest of the group enjoy themselves?

To complete the technique, the youngsters answer the questions devised on paper without writing their names. The recorder of the group or the teacher summarizes the answers for the next meeting of the group.

Sociograms

The sociogram is a diagram of the social relationships that exist in any group. It is begun by posing a situation in which pupils have unrestricted choices of companions in a single social situation. A sample question could be:

"This week, we will rearrange the seating arrangement in our room. You can help plan the arrangement by indicating the persons near whom you would like to sit. Put your name at the top of the paper and number one, two, and three on the line below. Opposite "one" put the name of the boy or girl in this room whom you would most like to have sitting near you. After "two" write your second choice, and after "three" your third choice. After collecting these very personal slips of paper make a graphic illustration of the patterns of choice. A sample picture might look like the one below:



It is important that the teacher knows which children are isolated from their group. When determined, steps should be taken to give these pupils opportunities to develop satisfying and acceptable personal relations with their classmates. Retiring pupils should be encouraged, too talkative or dominant ones given lesser importance and the whole group so encouraged and reformed as to make a satisfactory working unit.

SOURCES FOR AUDIO-VISUAL AIDS MATERIAL

(Film Strips)

B.I.F.	British Instructional Films Film House Wardour Street, LONDON, W.I., U.K.
Curr. (Curriculum Films)	Johnson Bros. Educational Films & Records 5512 - 20 Avenue N.W. SEATTLE 7, U.S.A.
D. Mail	Daily Mail School School Aid Department New Carmelite House LONDON, E.C.4, U.K.
E.B.F.	Encyclopedia Britannica Films Inc. 978 Queen's Way TORONTO, Canada
Egyptian Embassy	Egyptian Embassy OTTAWA
Eye Gate	Ryerson Film Service 299 Queen Street, W. TORONTO 5B, Ontario
Common Ground	Common Ground 44 Fulham Road LONDON, S.W. 3 U.K.
Hulton	Hulton Press Ltd. 43-44 Shoe Lane LONDON, E.C. 4., U.K.
J.H. (Jam Handy)	General Films Ltd. 1534 - Thirteenth Ave. REGINA, Saskatchewan
Life	Life Magazine Incorporated 9 Rockefeller Plaza NEW YORK 20, N.Y.
P.S.P. (Popular Science Publishing)	McGraw-Hill Co. of Canada Ltd. (Text Film Department) 253 Spadina Road TORONTO 4, Ontario
S.V.E.	Society for Visual Education Inc. 1345 West Diversey Parkway CHICAGO 14, Illinois
U.K.I.S.	United Kingdom Information Services 119 Adelaide St. West TORONTO, Ontario
Unicorn, Ltd.	Unicorn Head Visual Aids Ltd. 35 Portland Place LONDON, W.I., U.K.
Wayne University	Audio-Visual Materials Consultation Board Wayne University DETROIT 1, Michigan
Y.A.F. (Young America Films)	McGraw-Hill Co. (Text Film Department) 253 Spadina Road TORONTO 4, Ontario

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